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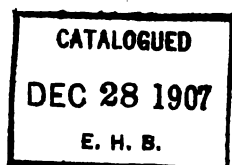
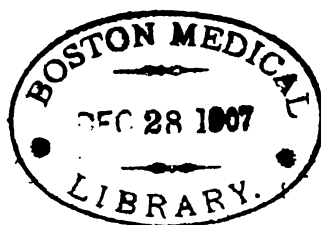
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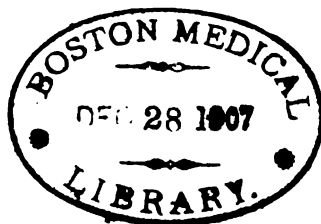
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ORIGINAL ARTICLES.

A PLEA FOR THE STUDY OF THE DEAF CHILD AND FOR THE TEACHING OF SPEECH TO THE SEMI- DEAF AND SEMI-MUTE.

By JAMES KERR LOVE, M.D.,
Aurist, Glasgow Institution for the Deaf and Dumb.

(Continued from p. 338, vol. lxvi.)

PART II.

WHAT was stated in the first paper amounts to an indictment of the present arrangements for the education of the deaf and dumb. The charge is not against one school, nor the schools of one country, but against nearly all existing schools, and it consists in this, that for want of careful clinical investigation into the physical conditions present in young deaf children, these latter are often wrongly treated and their education bungled. Let us see now what such a careful clinical scrutiny brings out.

The medical examination of school children is in the air just now. It is a part of the English Education Bill of the present Government. It has been introduced almost as an after-thought at the suggestion of the British Medical Association. The discussion on

the Bill from this distance sounds like the din of a religious war. But the clause compelling the medical examination and supervision of children attending elementary schools is, perhaps, the most important part of this Bill. If properly carried out, this examination and supervision of school children will nip in the bud most epidemics of scarlet fever, whooping-cough, and diphtheria, largely control the ravages of measles and influenza, and have a helpful influence in the crusade against tuberculosis. Hard of hearing and hard of seeing children will, by the timely removal of adenoid growths and the fitting of their defective eyesight with glasses, be in many cases changed from dull to bright scholars; and every child will become a little missionary of hygiene to the household in which he lives. It is just possible that the incidence of adventitious deaf mutism may be profoundly altered, and that hardly any but the congenitally deaf will ask admission to our institutions. But that will be one of the later results of the medical examination of the children of the elementary schools.

The schools for the deaf will no doubt be included in this medical examination and supervision, but as these are for the most part residential institutions already conducted on sanitary principles, medical supervision by Government will produce little alteration or improvement in their general management. Mr. Addison and I have shown that in the institution at Langside the children are so well cared for that although they come from the poorer classes, and many from the poorest classes, they surpass in physique, after a few years' residence, the children even of the better class board schools.¹ But the examination of the eyes, nose and throat, and of the ears is part of the proposed Government examination, and it is here that a greater improvement will be effected in the schools for the deaf than even in the elementary schools. It is therefore with the special organs of hearing, speech, and sight that this part of the enquiry chiefly deals.

THE SPECIAL SENSES IN DEAF CHILDREN.

The eye and the ear are the two great "gateways of knowledge," regarded from the educational point of view. The sense of touch, though less consciously employed, is hardly of less importance. It is by the sense of touch, associated with the "muscular sense," that both the hearing and the deaf child place accurately the tongue for the production of different sounds. Taste and smell, except in the blind-deaf, are quite secondary in their educational value. In these latter, however, they become exalted in value to a marvellous degree. Recently the writer spoke with Miss Helen Keller for the greater part of a day without any difficulty. By placing her thumb on his larynx, and spreading her fingers over the side of his face,

¹ *Deaf-Mutism* (MacLehose, Glasgow), 1896.

she lip-read, or rather face-read, all he said, with hardly any difficulty. During a walk of several miles she identified leaves, blossoms, &c., picked up from the ground, by the senses of touch and smell.

In spite of the loss of sight and hearing, this charming woman seems to discern more than most of us who have eyes and ears. In one of her early letters she says, "The mountains are crowding round the springs to look at their own beautiful reflections." In speaking of Boston Common (a fine public park in the city), she says:—"Somehow after the great fields and pastures and lofty pine-groves of the country, the scene here seems shut in and conventional. Even the trees seem citified and self-conscious. Indeed, I doubt if they are on speaking terms with their country cousins. They are like the people whom one sees every day who prefer the crowded city to the quiet and freedom of the country. They do not even suspect how circumscribed their lives are. They look down pityingly on the country folk who have never had an opportunity to see the great world. O, my! if they only realised their limitations, they would flee for their lives to the woods and fields."

Speaking of her delight in books she says:—"Here I am not disfranchised. No barrier of the senses shuts me out from the sweet, gracious discourse of my book friends; they talk to me without embarrassment or awkwardness."

And yet Helen Keller lost her sight and hearing completely when she was but 19 months old. She is an exceptional, a wonderful woman, and with this remark most people dismiss her case as having no bearing on the education of the ordinary deaf or blind child. I shall take up this question later, and try to show that her case has a very clear lesson for educators of the deaf. Meanwhile, let us say a short good-bye to her in the words of the American poet Steadman—

"Pity thy unconfined
Clear spirit whose enfranchised eyes
Use not their grosser sense?
Ah, no! thy bright intelligence
Hath its own Paradise,
A realm wherein to hear and see
Things hidden from our kind.
Not thou, not thou, 'tis we
Are deaf, are dumb, are blind."

THE EYESIGHT IN DEAF CHILDREN.

The ordinary deaf child, however, must have good eyesight if he is to learn well. The rapid manipulation of the fingers in hand-spelling, and the still more rapid and delicate movements of the mouth, require good eyes if hand-reading or lip-reading is to be done by the deaf child. Good eyesight is also necessary if the writing and figures of the blackboard are to be understood. But it would seem that

deaf children seldom see perfectly. In this respect they are worse than hearing children. Amongst the latter the proportion of those having defective vision varies a great deal, being small as a rule in country schools, higher in city schools, and almost always higher in the upper than in the lower classes.¹

The number of children in hearing schools having defective vision seems to vary from 10 to 40 or 50 per cent. But amongst the deaf children at Langside almost two out of three have defective vision, even when the ordinary standards are not very rigidly insisted upon.

Some months ago the teachers were asked to report on the general intelligence of the children in class, and to note any cases of bad eyesight. Out of an attendance of 170, 16 per cent were reported as having bad or poor sight. More recently each classroom was provided with a set of Snellen's types, and the teachers were instructed how to test each eye separately. Of 172 children on the roll, 143 were considered sufficiently acquainted with letters to have the test applied. Eighty-six (or 61 per cent) of these were defective in one or both eyes. To enable these children to do their work efficiently almost all must be fitted with spectacles. How many cases of "poor intelligence," "bad progress," &c., would disappear, or how many duffers would be turned into bright children were these eye-defects corrected, I cannot tell, but it is quite safe to assert that such changes would occur.

THE REMAINING HEARING IN DEAF CHILDREN.

In searching for and mapping out the remaining hearing, the plan adopted was to begin at the top of the school and work downwards till 100 children had been examined. There are about 170 children in the school, but it was decided to limit the enquiry to 100 for two reasons—(1) The youngest children have not sufficient education to appreciate the tests; and (2) the time spent over the work was very great, each child requiring for the ear tests alone about an hour and a half. Often, however, two children were examined at once. The time occupied by this part of the enquiry was three winters. The subject of the enquiry was "the Semi-deaf and Semi-mute in our Institutions for the Education of the Deaf and Dumb," and the subject was chosen by the writer because during his long work amongst the deaf he had become convinced that these were at present not properly taught.

Perhaps no more unfortunate time could have been chosen than the present for making out a strong case for this separate and special treatment of the semi-deaf and semi-mute. These two classes are drawn chiefly, though not entirely, from the subjects of acquired deafness—those who have been born hearing. Now, at Langside, and indeed generally amongst deaf-mutes, children who are admitted for

¹ *British Medical Journal*, 22nd September, 1906.

tuition consist of about half born deaf and half born hearing. Amongst the 100 children examined the proportions are as nearly as possible two-thirds born deaf and one-third born hearing. The result is that the proportion of semi-deaf and semi-mute children is under the average, and the case for the semi-deaf child is therefore understated. Amongst the 100 children examined there are even curious variations in the incidence of congenital and acquired deafness. Amongst the first 50 the half and half ratio is almost maintained. Amongst the last 50 about three-fourths are born deaf. There is, however, a return to the normal ratios for the children admitted during the



FIG. 1.

winter 1905-1906—not here dealt with—for out of 24 children admitted 12 were born hearing.

Watches, acoumeters, whispered speech, and in most cases speech in conversational tones, are useless in the discovery of the remains of hearing in the deaf or dumb. Were this not so, deafness would not involve mutism. The clapping of hands, the ringing of bells, the loud shouting of vowels, and sometimes of consonants, elicit evidence of hearing from many deaf-mutes. Stamping on the floor is a fallacious test, for appreciation of the molecular disturbance transmitted to the body and the bones of the head is no evidence of

hearing. Whatever the tests used, they must be applied under the following conditions :—

When *the voice* is used as a test, the ears must be tested separately, and precautions must be taken against lip-reading. All very deaf people lip-read to some extent, and some, even the untaught, lip-read to a very great extent. The test words or vowels should be pronounced either behind the child's back, or his eyes should be covered



FIG. 2.

by the surgeon's hand. For the practical purposes of the teacher, testing by the voice is by far the most valuable method. If a child cannot hear the sounds of the voice, it does not much matter what he hears above or below in the musical scale.

For the demonstration of the presence of aerial hearing, the writer has found a *large bell* the best instrument (Fig. 1, p. 5). The blind-folded child is made to count the strokes, delivered singly or at short

intervals. The bell used is a large dinner bell, with a spring tongue attached at the junction of the handle and the bell, and so arranged

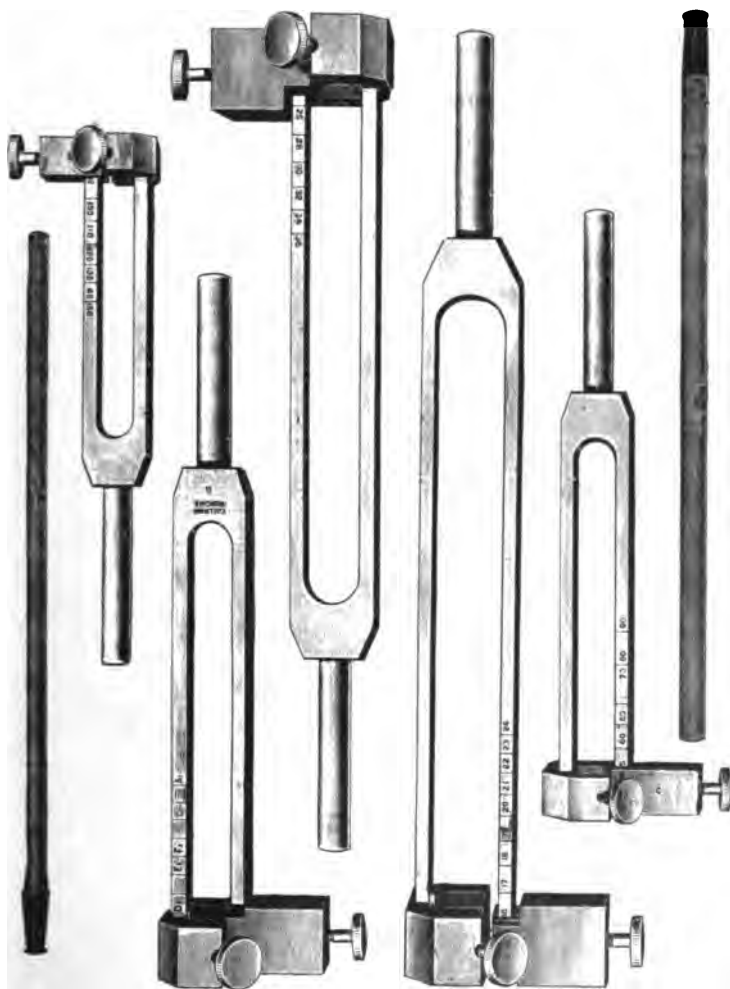


FIG. 3.

that a violent shake produces a sound of great intensity. In the open air this bell can be heard at a distance of over 1,000 yards. Such a bell is not only capable of emitting very loud sounds, but,

being rich in overtones, represents a very large part of the musical scale.

A single large *tuning-fork* may be used for testing for the presence of hearing in deaf-mutes. It may be used either in the air or on the mastoid process. Although the fork thus used brings out in a few cases evidences of hearing which have not been discovered by the voice, its use is very limited, because it represents only one tone without overtones, and because it requires a very intelligent deaf-mute to appreciate the conditions of the experiment. On the mastoid,

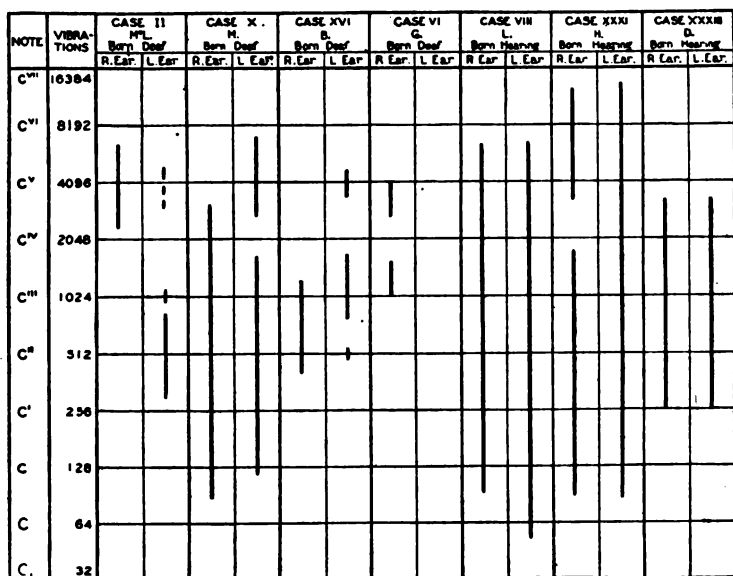


FIG. 4.

SPECIMEN CHART OF HEARING ISLANDS IN CONGENITAL AND ACQUIRED DEAF-MUTISM.

tremor is apt to be taken for *sound*. But for mapping out areas of hearing in the ears of deaf-mutes, it will be seen that the tuning-fork is of special value.

The tests used in this inquiry were Bezold's continuous tone series, made by Edelmann, of Munich. This series consists of fourteen tuning-forks, two whistles or pipes, the pitch of which can be varied by means of a movable stopper, and the modification of Galton's whistle, made by Edelmann (Figs. 2 and 3, pp. 6 and 7). The pitch of the forks is varied by movable clamps. The whole series supplies tests ranging from 16 vibrations per second to over

50,000 vibrations. The time needed for testing one child is about one hour and a half. It is possible to examine two or even three children at a time, but this means additional precaution to ensure accuracy, and prolongs the period of examination.

The ears were tested separately, the ear not under examination being stopped thoroughly by a finger. The forks were struck and the whistle made to sound behind the child being tested ; and control tests in which no sound is produced were used to make sure that the answers were reliable. An experienced teacher, usually Mr. Addison (the Principal of the Deaf and Dumb Institution, Glasgow), was seated before the children, to interpret the appreciation for tests used.

This being an inquiry chiefly into the condition of the semi-deaf and semi-mute, these two terms had better be defined now.

The classification adopted by the Royal Commission on the Deaf,¹ and generally adopted by writers on deaf-mutism, is as follows :—

1. Those who are congenitally deaf and are consequently dumb.
2. Those who become deaf after birth—acquired or adventitious deafness—comprising these two classes:—(a) Those who become deaf before acquiring speech—say, before 2 years of age ; (b) those who become deaf after acquiring speech, and who continue to speak in virtue of the unforgotten speech of the earlier years—the semi-mute.
3. Those who possess so much hearing power that they hear, and to some extent distinguish, the sounds of the human voice—vowels, consonants, or even some words—the semi-deaf.

There is, for teaching purposes, no practical distinction between the congenitally deaf defined under heading 1, and those classed under (a) of heading 2. Both are the subjects of “surdism,” or have that amount of deafness which prevents the development of speech. But (b) of heading 2—the semi-mute—should, for practical purposes, be classified separately, or grouped with heading 3, because their speech depends on hearing which does exist or has existed. A better classification of the deaf, therefore, would be—

1. The subjects of “surdism.” Those congenitally deaf or becoming deaf so early in life that no speech will develop apart from special tuition.

2. The semi-deaf and semi-mute. The former have some speech in virtue of their power to distinguish the separate tones of the human voice ; the latter may have no hearing at all, but speak in virtue of the hearing and speech present before deafness occurred. It is generally assumed that the semi-deaf belong wholly to those having become deaf adventitiously. Most of them do so, but a few, as we shall see, belong to those *congenitally* deaf.

During the first winter of this research the hearing of 33 children was mapped out. As these have been already published,² a short synopsis only will be given here.

¹ Report presented to both Houses of Parliament, 1889.

² *Diseases of the Ear* (J. Wright & Co., Bristol), 1904.

10 DR. LOVE—*Plea for the Study of the Deaf Child and for*

1. Sixteen of the 33 children were born deaf and 15 born hearing, whilst with regard to two cases the state at birth is doubtful.

2. None of the 15 acquired cases had any deaf-mute relatives; 8 of the 16 congenital cases had amongst them 16 deaf-mute relatives, and these are almost all closely related to the deaf child.

3. Every congenitally deaf child had some remnant of hearing, whilst 6 of the acquired cases were quite deaf in both ears, and 2 quite deaf in one ear. But where hearing existed in the acquired cases it was better as a rule than in the congenital cases.

4. In none of the congenital cases did otoscopic examination discover any gross destructive lesion of the middle ear. In 12 of the 15 acquired cases there was loss of the whole or part of the membrane, loss of ossicle, or scar of old perforations.

5. There were 7 semi-mute and 7 semi-deaf children amongst the 33 children examined. The semi-mute cases were all, of course, found amongst the children whose deafness had been acquired, but 1 at least of the semi-deaf children was found amongst those born deaf.

The cases examined during the second winter, 1904-1905, were as follows:—

CASE 34.—Christina C., æt. 14 years. Medical certificate not filled up, but was probably born deaf. Has a deaf-mute sister in school. Right tympanic membrane normal; left, indrawn, and a little reddened; tonsils enlarged, and adenoids so marked that removal is recommended. On the right ear is a hearing island, extending from c^1 to g^2 , and a small island in Galton's whistle 19 to 15 mm. On the left ear she hears Galton's whistle 17 to 14·5 mm. She does not distinguish words, and speech, lip-reading, and intonation are bad; intelligence is fair; eyesight is said to be good.

CASE 35.—Sarah B., æt. 13½ years; eight in family—six alive, two died by convulsions. Born deaf. Both membranes much retracted, tonsils slightly enlarged, adenoids fairly well marked. On left ear hearing extends from D_1 (35 vibrations) to the top of scale, and also throughout Galton's whistle. The right ear hears none of the forks nor Galton's whistle. Lip-reading, speech, and voice intonation are all good, and she hears and distinguishes some vowels by the left ear. The eyesight is poor. The girl is intelligent.

CASE 36.—Maggie S., æt. 14. Both membranes normal, and some cerumen has had to be removed from the right ear. The throat is normal. Small c (128 vibrations) is heard by the left ear; g is also heard, but feebly, by the left ear, then g^1 is heard; c^2 and g^2 are also heard, but nothing above this is heard. The perception of all those notes is weak, but the answers are reliable. On the right ear d^1 (288 vibrations) only is heard. Speech is bad, lip-reading bad, intelligence is very good, and eyesight is good.

CASE 37.—Mary J., æt. 10 years. Born deaf. Both membranes normal. Tonsils so large that removal is recommended. On the

left ear c (128 vibrations) is heard and upwards without break to c^4 (2,048 vibrations). Galton's whistle is unheard. On the right side she hears d^1 (288 vibrations) upwards to g^2 (768 vibrations), then there is a deaf area till c^3 (1,024 vibrations) is reached. She hears from c^3 to g^4 (3,072 vibrations), and nothing above this. Intonation of voice is good, articulation guttural, eyesight good, lip-reading fairly good, intelligence very good.

CASE 38.—Willie F. Born deaf. There are three deaf mutes in the family (two sisters and one brother), all having been educated at the Glasgow Institution. There is chronic middle ear suppuration on the right side, and chronic mastoiditis. The left ear is dry, but the membrane shows cicatrices. The throat is normal. On the right side there is a hearing island from c (128 vibrations) to g (192 vibrations). Then another island from d^1 (288 vibrations) to c^2 (512 vibrations), all above this is unheard. On the left side g^4 and c^5 forks are heard (3,072 vibrations to 4,096 vibrations). Galton's whistle is heard from 25 to 13 mm. on this left side. Speech and intonation are both poor; eyesight is poor; and lip-reading and intelligence are fair.

CASE 39.—George M., æt. 15. Said to have been born deaf, but able on admission to speak a few words. He lost his right leg by a fall, and he has epithelial plugs and bad smelling discharge in both ears. There is slight eczema of both auricles. There is no large perforation, but there is ossicular caries on both sides. The throat is normal. He hears on both ears from D_1 (35 vibrations) to c^5 (4,096 vibrations). Galton's whistle is heard on both sides from 25 to 5 mm. He hears and distinguishes vowels, consonants, and words spoken close to his ear. Speech and intonation are fair, lip-reading is good, and eyesight good; intelligence is fairly good.

CASE 40.—Isabella I., æt. 14. Born hearing. Both tympanic membranes normal, and throat normal. Cause and date of deafness unknown. With right ear hears from d^1 (288 vibrations) to a^1 (384 vibrations), and nothing below or above this island. She has no hearing for any fork on the left side. Speech, intonation, and lip-reading are all poor. She responds to some sounds, but cannot imitate them. Eyesight good; intelligence very good.

CASE 41.—Margaret M'A., æt. 13. Born deaf, and has a deaf-mute brother and a deaf-mute sister in the institution at present. Membranes normal, and throat also normal. Hears with right ear G (96 vibrations) and upwards to the top of the scale into Galton's whistle. Fork c^5 (4,096 vibrations) is heard painfully, some other notes are also heard very well but less painfully. She hears nothing at all with the left ear, not even the whistles. Speech and lip-reading are fair, voice shrill. She hears but does not distinguish vowels. Eyesight good; intelligence very good.

CASE 42.—Jessie N., æt. 14 years. Born deaf. Both membranes are intact, but the right is somewhat retracted and dull; throat is normal. Hears nothing on the right, not even the whistles. On

the left an island begins at *B*. (120 vibrations), and soon disappears at *e* (160 vibrations), then the hearing reappears at *a* (212·8 vibrations), and extends continuously to 5 mm. of Galton's whistle. Speech, intonation and lip-reading here are very poor, eyesight is good, and intelligence is good.

CASE 43.—Chas. R., æt. 13. Born deaf. Five first cousins once removed are deaf and dumb, one female cousin is deaf and dumb, and the mother's cousin is deaf and dumb. Membranes and throat are normal. On the right side he hears from *G* (96 vibrations) to *d* (144 vibrations), then he hears from *c*² (512 vibrations), with hardly any interruption, to Galton's whistle, 15 mm. On the left the island begins at *c*² (512 vibrations), and runs up to 12·5 mm. in Galton's whistle. Speech is fair, intonation fair, lip-reading is poor, eyesight is good, and intelligence is very good.

CASE 44.—Agnes C., æt. 14. Born deaf. Both tympanic membranes normal; throat normal. There is no response to any hearing test by either ear. The intonation of the voice is bad. The articulation is bad, the lip-reading is poor, but the general intelligence is very fair; the eyesight is good.

CASE 45.—Eliz. M'W., æt. 13. Born deaf. Dry perforation in the right ear; the left membrane is normal, and the throat is normal. Hears with right ear *g* (192 vibrations) and upwards to *c*² (512 vibrations). On the left side *C* (64 vibrations) and upwards to *g*³ (1,536 vibrations) are heard. The perception for the lower notes seems to be delayed. Speech is fairly good, lip-reading and intonation of voice are poor, the eyesight is good, and the intelligence is very good.

CASE 46.—Donald B., æt. 14. Born deaf. Some of his friends are said to be partially deaf, but there is no history of deaf-mutism. Both membranes are normal, and the throat is normal. Hears on right side *d*¹ (288 vibrations) to 5 mm. in Galton's whistle, with the exception of an area from *g*³ (1,536 vibrations) to *c*⁴ (2,048 vibrations). On the left side *C* (64 vibrations) is heard, then *G* (96 vibrations), and from this to 4 mm. of Galton's whistle is heard. The hearing on the left side seems better than that on the right in the lower parts of the musical scale; in the very high notes of Galton's whistle both ears hear better about 14 mm. and upwards to 4 or 5 mm. Speech, lip-reading, and intonation of voice are all poor; eyesight is good, and intelligence is very good.

CASE 47.—Chas. L., æt. 15 years, said to have been born hearing, but to have lost hearing by a fall on the head, at the age of 2 years, when recovering from influenza. Five of the family died in infancy, and three (including the patient) are alive. Membranes are normal, and the throat is normal. On right side *C* (64 vibrations) is heard, and this island extends upwards to *c*² (512 vibrations), *d*² (576 vibrations) is heard, but the island disappears before *g*² (768 vibrations). He hears nothing further till 14 to 7 mm. Galton's whistle. On the left side a small island *C* (64 vibrations) to *c* (128 vibrations)

exists. Nothing more is heard till 25 to 20 mm. of Galton's whistle. The testing with Galton's whistle is rather unsatisfactory, but he probably hears the islands as stated. Speech, lip-reading, and voice-intonation, all very bad; eyesight is good, the intelligence is rather poor, and his answers are slow.

CASE 48.—Winnifred M'L., æt. 12 years. Born deaf, with one sister and one brother deaf-mute, both in the institution. The right membrane is much retracted, there is a perforation in the left, and the remaining part of this membrane is calcareous. The tonsils are enlarged. Hears on right from C (64 vibrations) to c (128 vibrations); then a second island begins at c^2 (512 vibrations), and extends to g^2 (768 vibrations); c^4 (2,048 vibrations) is heard as a single note. On the left g^2 (768 vibrations) is heard quite decidedly as a single note, and no other hearing exists on this side. Speech, lip-reading, and voice-intonation are fairly good; eyesight is good, and intelligence is very good.

CASE 49.—Mary R. T., æt. 12 years, belongs to an Ayrshire family.¹ Born deaf, has one sister in the institution, a deaf-mute, and two other sisters are also deaf-mute. Membranes and throat normal. On the right A_1 (53.2 vibrations) to g (192 vibrations). On the left, nothing is heard. Speech, lip-reading, and voice-intonation, all are good; the eyesight is good, and the intelligence is very good.

CASE 50.—J. W. R. A., æt. 12 years. Probably born deaf, but is said to hear loud sounds. Right membrane is normal, the left is retracted and dull; the throat is normal. On right side a (212.8 vibrations) to g^2 (768 vibrations) are heard, but nothing else is heard by the right ear. On the left side d^1 (288 vibrations) to c^2 (512 vibrations) are decidedly heard. This island continues doubtfully to g^2 (768 vibrations), but nothing is heard above this. The speech is fair, the intonation is poor, but the lip-reading good. The eyesight is good, and the intelligence is very good.

CASE 51.—John J., æt. 15 years. Born deaf. Both membranes are retracted and somewhat dull. On the right side c^5 (4,096 vibrations) is the lowest and only note heard. On the left c^3 (1,024 vibrations) up to 12 mm. of Galton's whistle is heard as one long continuous island. Speech and voice intonation are bad, and the lip-reading is poor; eyesight is good, and the intelligence is fairly good.

CASE 52.—Mina K., æt. 9 years. Born deaf. Collateral deafness. She belongs to an Ayrshire family. The mother is a congenital and the father an acquired deaf-mute. Both membranes are normal, and the throat is normal. With the right ear c (128 vibrations) is heard, and this island continues to c^3 (1,024 vibrations). The hearing reappears at g^4 (3,072 vibrations), and extends to c^5 (4,096 vibrations). On the left ear c (128 vibrations) is heard as a single

¹ A family so named by the author, and described in his work on *Deaf-Mutism*.

note. Any hearing above this seems doubtful. Speech is poor, lip-reading is fairly good, the intonation of the voice is poor, and the intelligence is very good; the eyesight is good.

CASE 53.—Robert K., *æ*t. 14 years, brother of above. Born deaf. Both membranes normal, and throat normal. With the right ear this boy hears g^4 (3,072 vibrations), but nothing else with this ear. On the left a (212·8 vibrations) right up to c^3 (1,024 vibrations), then c^5 is heard as a single note, but nothing else by this ear. Speech is good, lip-reading is good, intonation of voice fair, and intelligence very good; the eyesight is good.

CASE 54.—James A., *æ*t. 13 years. Membranes are both normal; tonsils are enlarged. On the right side he hears a (212·8 vibrations). There is some doubt about the hearing for c^1 , but he hears g^1 (384 vibrations), and the island is continued to 13·5 mm. of Galton's whistle. On the left a is heard again, there is doubt about c^1 , but g^1 is heard, and the island is continuous to 16 mm. of Galton's whistle. Hearing seems to be better in the right than in the left ear. Speech is fairly good, intonation of voice is fair, lip-reading is good; the eyesight is good, and the intelligence is very good.

CASE 55.—John M'L., *æ*t. 14 years. Probably born deaf. Right membrane is intact, but reddened, the left is normal; the tonsils are slightly enlarged. On the right c (128 vibrations) is heard, and this island extends to c^5 (4,096 vibrations). Nothing above this is heard. On the left the island begins probably as low as G (96 vibrations), c (128 vibrations) is heard as in the right ear, but more distinctly, and the same remark applies throughout to the hearing in the left ear, which extends to 18 mm. of Galton's whistle. The speech, lip-reading, intonation of the voice, and the intelligence are all very good. The eyesight is good.

CASE 56.—Matt. H., *æ*t. 15 years. Born deaf. There are nine children in the family, three of whom (including patient) are deaf-mutes, and one of whom is in school. The membranes and throat are normal. On the right, hearing begins at G (96 vibrations), and extends to c^5 (4,096 vibrations). Hearing above this point is doubtful, and any hearing he has for the high notes of Galton's whistle soon disappears, evidently from fatigue of the auditory nerve. On the left the island begins at c (128 vibrations), and extends to c^5 (4,096 vibrations). Although c^5 is best heard on the left side, the hearing throughout is best on the right side. Speech, intonation of voice, and lip-reading, are all bad (described as *nil*); the eyesight is good, and the intelligence very good.

CASE 57.—John O., *æ*t. 13 years. Deafness is said to have been caused by a fall at the age of 2 years. The father and mother are both blind. The membranes and the throat are normal. The boy has a piece of loose cotton-wool in one ear. On the right G (96 vibrations) is heard, and the island extends to the lower notes of Galton's whistle, where, however, it is difficult to fix a definite

upper limit. On the left side the island begins at d^1 (288 vibrations) and extends to c^3 (1,024 vibrations). After a short gap hearing appears at g^1 (3,072 vibrations) and extends to 11 mm. of Galton's whistle, where the same symptoms of fatigue are soon produced. The pitch of the human voice is imitated in the lower octaves. Speech is very fair, intonation is fair, lip-reading is good, and intelligence is very good; the eyesight is good.

CASE 58.—J. W. H., æt. 11 years. Born deaf. There is a fibrous patch on the right anterior pillar of the fauces. The tympanic membranes are intact. On the right side G (96 vibrations) is heard, and the island continues to 5 mm. of Galton's whistle. On the left the island begins at the same point G (96 vibrations) and extends to c^5 (4,096 vibrations). The hearing on the left side is not so good as on the right side, and Galton's whistle is doubtfully heard. All the vowels and many consonants are heard. Speech and lip-reading are very good, the intonation of the voice is good, the eyesight is good, and the intelligence is very good.

CASE 59.—Christopher A., æt. 11 years. Born deaf. Tympanic membranes and throat are normal. On the right side hearing begins at G (96 vibrations) and extends to 10 mm. of Galton's whistle. On the left side fork c^5 is slightly heard (4,096 vibrations), but nothing above or below this. This boy seems to hear vowels, but does not distinguish them. Speech, intonation of voice, lip-reading, and intelligence are all poor; the eyesight is good.

CASE 60.—Adam F., æt. $15\frac{1}{2}$ years. Born deaf; three others besides the patient being deaf and dumb (the entire family consists of five). Both tympanic membranes are intact, but recently he had a middle-ear suppuration. With the right ear there is no hearing below c^1 (2,048 vibrations), but the island extends upwards to 12 mm. of Galton's whistle. On the left side G (96 vibrations) is heard, and this extends to 7 mm. of Galton's whistle. He seems to hear but does not imitate vowels. He has not been receiving articulation training because he came late to the institution from a purely finger-system school. Speech, intonation of voice, and lip-reading are all poor; the eyesight is poor, but the intelligence is good.

CASE 61.—George S., æt. 14. Born deaf. Is a Eurasian, born in Bombay. Right tympanic membrane is dull, the left is normal, the throat is normal. No hearing in either ear for fork or whistle of any kind. Speech and lip-reading are *nil*, the eyesight is poor (myopic), the intelligence is fairly good.

CASE 62.—Grace M., æt. 15. Born hearing. Alleged cause of deafness, meningitis at the age of 3 years. Right membrane depressed in superior posterior quadrant. Left membrane normal; throat normal. On the right side C (64 vibrations) is heard, and this island extends to 6 mm. of Galton's whistle. On the left she hears nothing. Speech and lip-reading *nil*, eyesight fair, intelligence very good. He hears but cannot distinguish vowels.

CASE 63.—Nelly P., æt. 13 years. Born deaf. Three in family deaf and dumb; one brother and one sister also in the institution. Both membranes intact, throat normal. The right ear hears *C* (128 vibrations) to c^5 (4,096 vibrations). On the left side she hears *c* (128 vibrations) to g^3 (1,536 vibrations), then there is a gap to c^5 (4,096 vibrations), where another island begins, and extends to 16 mm. of Galton's whistle. Speech fairly good, intonation of voice good, lip-reading good, eyesight good, and intelligence very good.

CASE 64.—Jane K., æt. 14 years. Born deaf. Both membranes intact, but somewhat dull. Tonsils slightly enlarged, throat otherwise normal. On the right side she hears *G* (96 vibrations), and upwards to 4 mm. of Galton's whistle. On the left side a similar island is heard. Speech and lip-reading poor; eyesight and intelligence both good.

CASE 65.—Harriet P., æt. 14 years. Said to have been born hearing, but cause of deafness unknown. Both membranes intact, throat normal. The answers to fork tests are quite unreliable, and it is doubtful if anything is heard. Her facial expression does not indicate any hearing. Speech and lip-reading *nil*, eyesight fair; intelligence very poor.

CASE 66.—Nelly T., æt. 14 years. Born hearing. Became deaf at 1 year from meningitis; has been epileptic during most of school period and getting worse. Both membranes intact, but slightly dull, especially the right membrane. Both tonsils enlarged. On the right side *G* (96 vibrations) is heard, and this island goes to c^3 (1,024 vibrations). No hearing exists above this. On the left side *D* (144 vibrations), and upwards to c^3 (1,024 vibrations), forms a hearing island. Nothing is heard above this. The hearing seems to be weak on both sides, but more acute on the left than on the right side. Speech and lip-reading *nil*, eyesight poor, and intelligence very poor.

(*To be continued.*)

OPERATIONS FOR DEVIATION OF THE NASAL SEPTUM, WITH SPECIAL REFERENCE TO SUBMUCOUS RE- SECTION.¹

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WITHIN the last ten years many advances have been made in nasal surgery, and of late great attention has been paid to correction of deformities of the nasal septum. As will be seen further on, the question is not by any means a new one, but the submucous resection operation has been received with unbounded enthusiasm in many parts of the world, and, indeed, there is just a fear that the importance of other operations may be overlooked. Lest some may be inclined to exaggerate the importance of this branch of surgery, it will do no harm to quote an excellent paper upon the subject by Dr. Winslow in this year's *Transactions of the American Laryngological Association*, in which he says—"While some degree of septal deviation is so common that it may almost be regarded as a normal condition, a deviation becomes pathological only when it interferes with normal nasal function, producing consequences that can rationally be attributed to the deformity; according to Beaman Douglass this occurs in from 11 to 12 per cent of the cases only. Some of the most marked deformities that I have ever seen caused no detectable disturbances. We should operate, therefore, only for the relief of definite symptoms, and not simply because of anatomic abnormalities." The same writer very properly remarks that the best treatment for deviated septa may consist in avoiding operation, and in this connection it would be well to remind you of an interesting remark by Sir Felix Semon, "that no operation should exceed in magnitude the importance of the symptoms." Granting that every precaution be taken before proceeding to operate, and that every surgeon should exercise the most conscientious consideration in judging whether a patient requires an operation or not, there are undoubtedly many instances where nothing but correction of the deformity will restore natural breathing.

¹ Demonstration given to the students of Anderson's College Medical School, 14th December, 1906.

When it has been decided that operation is the proper course to pursue in a given case, the question as to which method should be adopted is the next step to be considered, and inasmuch as the submucous resection procedure has received great consideration of late, and promises the desired result in a large number of cases, its value in comparison with other operations is a matter of importance to the student of rhinology. The subject is by no means an easy one, because of the large number of names associated with different procedures, and the only way one can arrive at a proper understanding is by a comparison of the principal methods. This involves to a certain extent a study of what has been done in the past, and for this reason it is important that in any critical review a short history should be attempted.

I shall, in the first place, give you a short *résumé* of what had been done before the well-known papers of Killian and Freer were published. As far back as the year 1750, Quernmalz recognised the condition like many others before him, and suggested that something might be done to correct the deformity by digital manipulation. In the year 1845 Dieffenbach simply recommended that the projection should be sliced off with a knife. In 1847 we read of the first attempt at resection of the mucous membrane, as Heylen did this, and then removed the deformed portion of the cartilage, and so preserved the mucous membrane. Chassaignac in 1851 described a method of dissection of the mucous membrane, and also recognised the difficulty of resiliency, as is shown by his attempts to make certain incisions through the deflected part, and it is to be noted that he inserted plugs after the operation to keep the parts in their new position. Demarquay in 1858 operated by opening the cavity externally, and Linhart in 1862 dissected the mucous membrane on both sides before removing the deformity. In the early sixties Blandin devised a punch so that small discs could be removed, but he did not pay much attention to perforation afterwards, and Ruprecht in 1868 also produced a punch. In 1875 the attempts to correct the deformity by comminution seriously began, because in that year Adams described his well-known forceps, clamps, and ivory plugs. In 1879 we have the well-known stellate punch of Steele. In the eighties we find some very important work done—Jurasz modified Adams' forceps, Hartmann returned to the question of submucous operations, and Seiler described his work with burrs. In 1883 we again find submucous operations being considered by Petersen, and in 1883 Maurice J. Asche performed his first operation and

began the systematic study of the movements in technique which culminated in his well-known paper seven years later. The subject is still further advanced by the investigations of Roux, Trendelenburg, and Herbert; and in 1889, when Bosworth's great classical work was published, we find the author, along with Woakes, using saws. By this time Curtis was using trephines for drilling off the offending part; Jarvis had recommended cutting forceps, and after piercing the projection with a needle removed the deformity by means of a snare; while John B. Roberts, after making linear incisions by a bistoury along the prominent lines of the inside, pressed the parts into position, and introduced a long steel pin to keep them in place.

At the end of the last century Gleason introduced his well-known operation of a U-shaped flap made by inserting a saw beneath the projection, at first horizontally and afterwards vertically, parallel with the septum. By this means he cut out sufficient bone or cartilage, and took care to make the portion large enough to be outside the region of the deformity. The portion cut out was then forced into the opposite nostril.

Asche's work is of the first importance, and is mainly applicable to the cartilaginous portion. By means of specially devised instruments, consisting of a pair of strong cartilage scissors (one blade thick and blunt for introduction into the obstructed nostril; the other, the cutting blade, of a curved wedge-shape, the shanks curved outward so as to admit of closing without interfering with the columna), and a curved gouge for breaking up any adhesions that may exist between the septum and turbinated body, he made crucial incisions over the most prominent part of the deviation. In his first paper, published in 1890 in the *Transactions of the American Laryngological Association*, he described the method in the following way:—"The blunt blade of the scissors is inserted into the obstructed nostril, and the cutting blade into the other; a crucial incision is then made as near as possible at right angles at the point of greatest convexity. The forefinger is then inserted into the obstructed nostril; the segments made by the incision are pushed into the opposite one, and the pressure continued until they are broken at their base and the resiliency of the septum destroyed. On this point depends the success of the operation, for unless the fracture of these segments is assured, the resiliency of the cartilage will not be overcome and the operation will fail. The septum is then to be staightened with the Adams or other strong forceps, and the hæmorrhage checked before proceeding further." In

certain conditions of great and angular deformity it is not easy to make the incision recommended by Asche at the most prominent part of the deviation. His care and after-treatment has had a great influence on all such surgical procedures. When the bone is at fault this has to be fractured by safe methods.

In 1898 Douglas devised an operation which differed from that of Asche, inasmuch as with special instruments, a perforator and knife, he made incisions along the lines of deflection wherever they led and as far as they extended, and the parts were afterwards forced towards the opposite side. It is to be regretted that in this operation the cartilage was so often forcibly separated from the bony portion of the septum instead of the spine being cut with chisel and mallet through the nostrils, or in serious cases, from below by the supralabial methods, such as were devised by Loewe and Gaudier. Moure's operation, performed in France and England, resembles that of Asche, the instruments having blades at an obtuse angle to the handles. A cut was made along the floor of the nose as far back as possible, and a second as near as possible to the dorsum nasi. Special metallic plugs were introduced, which could be dilated afterwards and the parts kept in position for some days. His operation avoids the crucial incision, and did away with the difficulty of separating the septum, and it can be very quickly performed. Roe, in 1900, modified the operation, largely with a view to dealing with the bone as well as the cartilage, and devised fenestrated forceps for the purpose. Dr. Harrison Price, in this year's *Journal of Laryngology, Rhinology, and Otology*, has described an operation in which the incisions in the septum are like the letter **I** placed horizontally. This writer, like many others, still prefers greater support to the nasal arch than is promised by the submucous resection operation.

Some of the most recent writers, like Freer himself, give the credit of the first announcement of the essential principle of the method of resection of the deflected cartilage and bone to Kreig. It was at the end of the last century, however, that the great work of Freer and Killian was done, and their classical papers prove beyond all doubt that the former in America, and the latter on the Continent, had devised methods of submucous resection which were almost certain to be popular. It is difficult to give credit to one writer without referring to the work of the other, but Freer admits that Killian's work preceded his own, although he thinks that his papers were published before those of Killian. In any case, these two names will always be honourably associated, although other

writers, such as Hajek, Menzel, Ballenger, Fetterolf, and Jansen deserve to be mentioned, because of the importance of their work in this particular operation.

The choice of an operation is not made easier by the difficulty in classifying nasal deformities. In fact, no one is quite satisfactory. Some have attempted to base their classification upon cartilaginous or bony structures, others according to the situation, and not a few upon the shape of the deformed septum. The last named is probably the least satisfactory, because we may have simple deflection into one nostril, or complications owing to the pressure of redundant tissue, sigmoid deflections, angular curvature, split cartilaginous septum and deviations overlapping, causing deep grooves on the opposite side; in other words, we may have a simple deformity, or one of such a complicated nature that it cannot be classified. When an operation is to be performed, however, it is clearly of importance to know its exact situation and extent, whether there is bone as well as cartilage involved, the presence of redundant tissues must also be taken into consideration; and, lastly, there is the general consideration of the shape. Of course, quite apart from the fact of whether the operation should be done or not in a particular case, there are many other things to be considered, such as the age and condition of the patient.

If we have carefully noted the above considerations, and also remembered that our objects are to restore the septum to its normal position and afterwards to retain it there, the course to be adopted in most cases becomes sufficiently clear. It is necessary to preserve every part of the tissues which will be useful to the patient afterwards, and yet to remove what is unnecessary and what might prevent normal function.

Coming to the actual selection of operation, let me point out to you that comparatively simple remedies may do all that is required in a certain number of cases of nasal stenosis depending upon deviation of the septum. For example, Kyle recommends the old method of pressure suggested by Quelimalz, where the deflection is cartilaginous, thin, and flexible. He puts in a malleable nasal metal tube at first, shaped to fit the deflection, and afterwards gradually pressed it out. This tube is kept in from four to twelve hours each day for two or three weeks. Again, sometimes, when the deviation is not very marked, the removal of a small portion of a turbinated body or bone may do what is necessary, although the removal of normal structure, instead of the tissue which is causing the obstruction, is not always to be recommended. Then, in some

instances, especially where the deformity is due to a great thickness, the use of the saw may be recommended, as suggested by Bosworth; and there are cases where Seiler's burrs, or the trephines of Curtis, driven by an electric motor, may be very useful, especially if the operator first raises the mucous membrane so that it may be replaced after the hard structure is removed, and in this way prevent the troublesome ulceration of the surface and the slow healing which naturally follow. Putting aside, however, the simpler forms, let us consider for a moment what are the most serious methods at present recommended. We can in a way classify the different operations. First of all, we have these operations which depend upon comminution or fracture with forceps of some kind or another, and now I will show you the instruments for such operations as those devised by Adams, Roe, and Kyle. My own experience has been against relying upon comminution alone, for the simple reason that in comparatively few cases did I find it satisfactory. Generally speaking, I have had to combine the operation of fracture with some other method. In the second place, we have operations which depend upon incisions of different kinds and shapes, and of this class we may take as examples those of Asche, Moure, Gleason, Douglass, Roe, and Harrison Price. Lastly, we have the operation of resection by the submucous method, of which such procedures as Killian's and Freer's may be taken as the best types.

Before describing the operation, I will show you a set of Freer's instruments and another of Killian's, some of which are exceedingly ingenious. Briefly speaking, they consist of specially arranged small knives, some with the cutting edge all round the point, others on the side, and they are useful for the division of a membrane or cartilage within the cavity; separators or elevators, sharp and blunt, and, as a rule, narrow and thin so as to get under the membrane in awkward positions; Ballenger's swivel cartilage knife, although not approved of by all, is very generally used in this operation, and will be described further on; punch forceps, like those designed by Hartmann, and Freer's forceps, together with a mallet and chisel, such as those I show you designed by Killian, are useful in removing the hard structures. Previous to operation, I need hardly remind you that every precaution must be taken which a surgeon would take in any other part of the body for the prevention of sepsis, and every attention must be paid to the general condition of the patient. The operator's hands, instruments, and all dressings should be

prepared in accordance with all aseptic procedures. The inside of the nostrils should also be cleansed as thoroughly as possible, for although the vestibules are the most commonly infected part, still pathogenic microbe organisms have been found in the healthy nasal passages, and you must always remember that a patient upon whom you are operating may have suppuration in some of the accessory cavities.

When all preparations for operation have been completed the question of an anæsthetic arises, and while general anæsthesia is sometimes required, especially if the operator be unfamiliar with the operation or the patient be very nervous, still it can often be performed with a local anæsthetic only. Further, by giving a local anæsthetic, such as cocaine or eucaïne, a hæmostatic can be combined, such as adrenalin; if, therefore, you take pledgets of cotton or narrow strips of gauze well soaked in a solution of adrenalin to which 5 to 10 per cent of cocaine has been added, an excellent result will be got by packing these within the nostril and waiting until the desired effects are produced. Sometimes it is a little difficult to get in behind the obstruction, but generally, with a little care and two or three applications of the agents, we can operate with comfort and without much suffering to the patient. A little of the same agents may be applied to the unobstructed nostril in the same way. During the operation it is useful, if the cavities be at all free, to put in a strip of aseptic gauze so as to soak up discharges or blood. Local anæsthesia is often obtained by injecting an anæsthetic below the mucous membrane, and Messrs. Oppenheimer have lately brought out a bi-aseptule called anæstiform which contains eucaïne and sterilised serum. They claim for this a more rapid absorption, and that less of the anæsthetic will bring about the same result. As a rule, I would recommend you, because there have been accidents from injections, to adopt the procedure I have just recommended and to wait until the anæsthetic and hæmostatic effects have been produced by applying the agents to the surface of the mucous membrane.

The patient, as a rule, is best to rest upon a couch with the head raised. A full light from a forehead electric lamp or a strong reflected light is required, and nasal retractors are also necessary. With an ordinary bistoury, or one of the special knives described, an incision is made in the mucous membrane of the convex side, deep enough to cut into the cartilage without cutting the mucous membrane on the opposite side. This proceeding requires care, and may be helped very much by pressure from the concave side with the point of a finger. The incision

recommended by Killian is about half a centimetre inside of and following the line of the skin where it joins the mucous membrane from the attic, downwards and backwards into the floor of the nose. Freer prefers a vertical and horizontal line much like the letter L looking backwards, and claims for this the advantage of getting better at the tissues when we have to go far back. The mucous membrane and perichondrium are carefully dissected up, precautions being taken to remove everything so that the white surface of the cartilage is seen. The greatest care must be exercised so that no pin-hole or perforation be made—not always an easy matter—and the procedure is very much facilitated by blunt or sharp elevators. Adhesions to the outer wall sometimes make matters even more difficult. When the muco-perichondrium has been dissected sufficiently far back, then the cartilage must be carefully cut through its whole depth along the first line of incision, and the elevators gently and carefully introduced on the concave side of the cartilage. Should there be great concavity or angular depression, the risk of small perforations is great, and to remove the mucous membrane and periosteum on this side is sometimes a very tedious proceeding, especially when the deformity is great, and when it reaches far back in the region of the vomer. The next step is to remove the cartilage, which may be done in pieces by means of scissors or punch forceps, and when the operator has reached the vomer to find it deformed as well, the latter instruments are most useful. Killian introduced a small knife at the end of two thin blades, and Ballenger has improved upon this in his well-known swivel knife. One limb of the instrument is placed on either side of the cartilage, and by this ingenious instrument one can take out pieces of the cartilage with comparative ease. In any case, care must be taken to remove the deformity entirely, whether it be the cartilage or bone. Sometimes there are spurs or projections, and these must be carefully removed, so that when the two muco-perichondrial surfaces fall together they form a smooth, straight septum, although, it must be remembered, a soft, almost flapping structure, instead of the hard one like the normal in this position. If there be any pin-hole or other perforation, some attempts must be made to bring the edges together, and it is always more fortunate when perforations in the two walls are not opposite each other. With a needle such as I show you, devised by Killian, it is well to stitch the edges of the mucous membrane together, lest there be trouble afterwards with granulations along the lines of incision. Plugs made of aseptic gauze are afterwards placed in the nasal

passages, but all dressings in the nostrils should be removed as soon as possible lest there be absorption, and it need hardly be pointed out that any little discharges or blood-clots that may be found in the passages afterwards should be carefully removed by douching or sponging. In a few days the patient is quite able to go about, and in from a week to a fortnight he is generally well. In some instances, owing to the projection of a part of the cartilage into the opposite nostril, the operator may find it easier to make the incision in the concave side of the septum, but, as a rule, the obstructed one, or the convex side, is chosen. Generally, after an operation there is comparatively little hæmorrhage, and mild cold applications to the outside of the nostrils and a simple external dressing are all that is necessary.

There can be no doubt that the operation is often a tedious one, but, as will be seen from the advantages afterwards mentioned, there is less trouble with after-treatment than with many of the other operations, and probably the most common fault is to remove too little tissue. The rule ought to be to remove all obstructive tissues without endangering those which need not be removed and which may afterwards be required.

The maxillary crest must also be attended to, although there is not usually much difficulty in dealing with this if it be cut away by means of forceps or the chisel used. Some writers, like Dr. Tilley, of London, have advised that, as a matter of routine, the anterior half of the inferior turbinated body on the side opposite to the deviation should be removed.

When everything passes off satisfactorily, as usually happens in these cases, the results are very satisfactory as far as the breathing is concerned, and the fact that no splints are required, and no plugs beyond the dressings after the first day or two, is important; in a word, while many of the other operations can be done more easily and quickly at the time, the after-treatment is more troublesome.

It may have occurred to you that the removal of a large portion of cartilage and bone may lead to flattening of the nostrils, but as a matter of experience this does not seem to be the case, even in cases of injury, where blows have been obtained on the nose subsequently. Dr. Freer, who has operated on 178 cases, tells us that in 4 of such cases no damage was done, although the force of the injury had caused bleeding. The question of the possibility of operating upon children was seriously raised at the British Medical Meeting held at Toronto

this year, and Dr. Freer thinks it is suitable at all ages, notwithstanding the fact that Professor Killian does not consider it advisable that patients under 12 years should be subjected to this operation. In this connection it is interesting to note that Drs. Smith and Coakley, who took part in the discussion above referred to, think that a dentist could do much, in cases of high and narrow palatal arches and septal deformities, by the use of dental splints to widen the arch.

That the submucous dissection operation for nasal deformities deserves the greatest consideration no one can deny, in view of the large number of operators who within the last two or three years have recommended it, but, as Dr. Price Brown states, it would be unfortunate if Dr. Freer's sweeping statement that this is the best method of treatment for all cases of septal deviation received unqualified endorsement. Dr. E. Casselberry, in the *British Medical Journal* for 17th November, 1906, says:—"Dr. Freer idealised his operation in alleging its universal applicability, but I could cite off-hand at least two conditions in which it was obviously not to be preferred. First, in septal deflection with external lateral deformity the fracturing operations could be so made on the septum alone that in straightening it the external deformity was acceptably diminished; secondly, in young children the Watson-Gleason method was quite adequate, could be made in a few minutes under general anæsthesia, and left intact the framework of a developing feature."

It should also be remembered that no one disputes the fact that operators such as Asche, Roe, Moure, Douglass, Gleason, and Harrison Allan have had good results, and it must never be forgotten that the success of an operation often depends upon the familiarity of the operator with a particular method. It is difficult to see at present how the work of the writers just mentioned can be forgotten, or that their different methods will not in the future be found useful. Speaking as one who has had considerable experience in the removal of nasal stenosis due to septal deformities, and who is quite at one with the advocates of this most recent method in the advantages claimed for it, still I agree with Dr. Dundas Grant, who summed up the discussion to which I have more than once referred, when he said there was yet room for judicious eclecticism. Further, one will be able to judge much better of the results, and be in a better position to compare different methods, ten years hence than to-day.

SOME CURIOUS BODIES FOUND IN THE FEMALE BLADDER.¹

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ANYONE taking an interest in genito-urinary diseases is at once attracted by the enormous differences that exist in the tolerance of the bladder of females to foreign bodies.

I have come here this evening to interest you in one of the strangest phenomena met with in the surgery of this viscus, viz., the presence of foreign bodies introduced from without, and the great variation in the results following their insertion into the bladder.

The bladder, as you know, when inflamed is one of the most sensitive cavities of the body. Anyone who has experienced cystitis knows how helpless he is, and how commanding are its agonies in the acute form. Yet it would seem that some females either are less sensitive to pain in that viscus or have a greater power of tolerance.

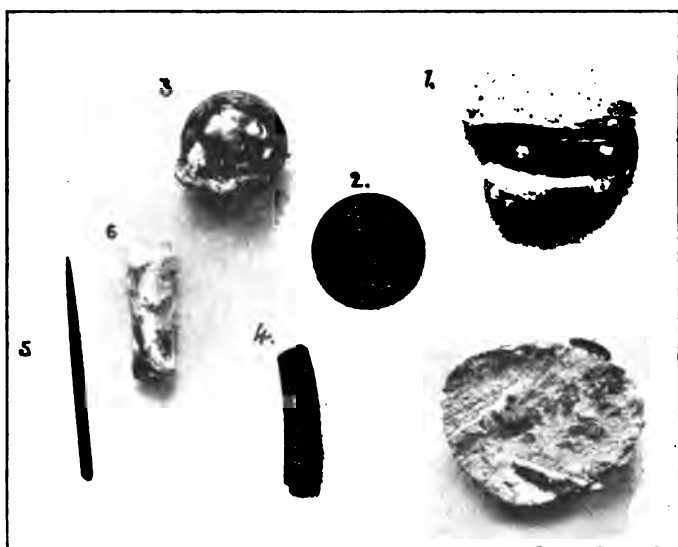
In the year 1896 the *x*-ray was first introduced as a means of discovering and locating foreign objects in the body, and while I was engaged as *x*-ray surgeon at the Royal Infirmary I made a good collection of bodies found therewith. Bladder examination by the Roentgen apparatus I soon displaced with the cystoscope, for evident reasons, chiefly from the difficulty in getting a sensitive plate or fluorescent screen near enough to the base of the bladder. The cases of which I speak to-night presented a few of the foreign bodies found in the bladder, excluding ordinary calculi.

CASE I (see illustration) was a very hysterical woman, over 40 years of age, and of a large and flabby build. The predominant symptom was cystitis, which had only been troublesome for three months. A large calculus was found, which I removed. Some time afterwards I was showing some medical friends the difference in density of the various calculi to the *x*-rays, when one of them remarked that this one contained a round object. We examined it more closely, and, when sawn

¹ Read at a meeting of the Glasgow Medico-Chirurgical Society held on 2nd November, 1906.

in two, it revealed the presence of a gold ring. How this object could have been introduced through a normal urethra was very wonderful, but still more so was the fact that it had been tolerated so long as to allow it to become the nucleus of a calculus.

CASE II.—The next remarkable instance is one where our smallest silver coin was pushed into the bladder through the urethra. The patient was a girl of 17 years. Her mother said that till a few days before the girl's health was very good, but she had noticed that she was going very often



to pass water and was wetting the bed at night. That day the girl had taken a fit of crying (a very frequent occurrence with her without any cause), but this time the crying was caused by great pain in making water. She had been very hysterical all her life. The coin is quite clean, and there is no calcareous deposit on it. The coin was extracted *per urethram*, and the girl, when asked how it got there, would not admit she had pushed it in a few days before. Her doctor, however, naively suggested that she had probably swallowed it.

CASE III was a girl, 20 years of age, of defective intelligence. The symptoms were constant efforts to urinate and great

incontinence when asleep. I discovered by the cystoscope a calculus covered with mucus. I removed it *per urethram* on account of its small size. I broke off some of the incrustation, and found in the interior a small brass bell, such as you often see attached to dolls. The bell was smooth, and had been retained long enough to allow of its being incrustated with salts.

CASE IV.—Some years ago a child was brought to me by his mother, who stated that he occasionally passed blue urine. I instructed her to let me have a sample, and to watch in future that the little one did not get any sweets with colouring matter. I spoke to the late Dr. James Finlayson about the matter, and he told me he had often heard of, but had never seen, blue urine. I never got a sample from this case, but I shortly afterwards saw another patient, a young girl, pass blue urine, which I show you now. It has been preserved *à la* Lister. The prominent symptom was nocturnal incontinence. The bladder was explored by me with the cystoscope, under an anæsthetic, and this copper object was found and extracted. I will not go into the various explanations I have heard of this colouring of urine from copper, but I am assured that this is not the only case. I sent a sample to Dr. Finlayson, who remarked that it was very wonderful, and he could not have thought it possible.

CASE V.—The next case is certainly the most miraculous I ever heard of. The patient was a young lady sent to have her knee examined by the x-rays. It was a most remarkable knee, and on the fluorescent screen were seen several objects like needles underneath the skin. When in the electrical room she had occasion to make water, and after she had done so a piece of a large needle, like the end of a hatpin, was found at the bottom of the slipper. Dr. Adams afterwards removed, I think, thirteen needles from the knee I had examined, and a good number from the other knee. She was a highly hysterical woman, and during great fits of passion seized needles and thrust them into her body.

CASE VI was a girl, æt. 13 years, suffering from intractable cystitis. Her doctor considered that she might be suffering from tubercular disease of the bladder, which from the symptoms and family history seemed very probable. I found in the bladder a small piece of slate pencil, and removed it *per urethram*. The history of the case was very interesting, and

lent itself to some speculation. The patient evidently had suffered from vaginitis for some years, and had been treated by her doctor for it. On making inquiries afterwards, I found this disagreeable affection had disappeared after the removal of the pencil. The pencil may have remained in the bladder for years, and have been the cause of this intractable vaginitis.

CASE VII.—In this case a pea had been introduced into the bladder, and had set up an acute cystitis within twenty-four hours.

Remarks.—In all these cases the onset of the cystitis was the symptom which brought them for treatment. They were all of a nervous or hysterical character, and differed chiefly in their ages and the degree of tolerance of the bladder to the foreign body. These bodies in some produced (as in the case of the pea and the coin) a most acute form of cystitis within twenty-four hours, while in others the foreign bodies had been retained for years without much evident inconvenience.

I cannot suggest what tempts such women to introduce foreign bodies into the bladder. It may be perverted satisfaction or nymphomania; I leave that to others better versed in the mysteries of hysteria; but one would expect that the patient would suffer a considerable amount of pain in introducing foreign bodies into the urethra such as I have shown here to-night.

CONGENITAL DISLOCATION OF THE PATELLA.

By ALEX. MACLENNAN, M.B., C.M.,

Dispensary Surgeon, Western Infirmary; Extra Honorary Surgeon,
Royal Hospital for Sick Children; Visiting Surgeon,
Glasgow Training Home for Nurses.

THE accompanying photographs and skiagram show a case of congenital dislocation of the patella, a somewhat rare condition. The deformity was noticed very early in infancy, and was doubtless congenital. The features in the case to which attention may specially be drawn are the following:—

1. The sex. As in the majority of cases, this child was a female; she is now 14 years old. Why the condition occurs chiefly among females is very difficult to explain, unless it

is because in them the femur has a greater inward slant than in males; this, however, would account more for the acquired than the congenital variety.

2. The presence of slight asymmetrical genu valgum. In the acquired form this has a distinct etiological bearing, but in the present case is rather a sequence of the dislocation than a cause of it. Signs of rickets were otherwise absent except for the presence of a tibial spine on the deformed side. The production of the tibial spine in cases of genu valgum is due to the attempt of nature to correct the deformity, and bone is deposited directly along the lines of force. These spines are situated directly in the line of the pressure from above. Bone is for a similar reason laid down



FIG. 1.

Shows right knee as little flexed as is compatible with the flexion dislocation.

after removal, for instance, of the shaft of the tibia so as to produce a new tibia having a similar form to the old; a bone evidently having for its requirements a definite utilitarian conformation.

3. Other occasional conditions, as, for instance, deformity of the condyle, were in this case absent.

4. Atrophy of the vastus internus was markedly present, but whether as a result or as one of the causes of the slipping of the patella it is impossible to say. It almost looked as if the atrophy of the internal vastus, by removing the inward pull on the patella, allowed it to be dragged outwards.

5. The dislocation took place only on flexion, and was complete—the variety being thus a complete external flexion congenital dislocation.

6. The operations done to correct such deformities are the following:—

(a) Reduction of the laxness of the internal part of the



FIG. 2.

(Congenital) external dislocation of patella (taken from behind). Note the tibial spine.

capsule, either by excising a part, by reefing the capsule, or by transplanting the patella according to the method of Schanz¹; (b) transplanting the patellar ligament with the

¹ Schanz, "Zur Pathologie und Therapie der habituellen Luxation der Patella," *Münch. Med. Woch.*, 1906, No. 19, S. 937.

attached part of the tubercle inwards; (c) operations on the bone, such as osteotomy, to produce a slight genu varum, or upon the end of the femur to deepen the groove between the condyles; (d) in this case the tendon of the semi-tendinosus was isolated above the condyle of the femur, freed from its attachment to the tibia below, and drawn through the upper wound.

The skin was then tunnelled through to the inner side of the patella, part of the capsule and periosteum slit, and the end of the semi-tendinosus drawn through and stitched in position. The operation took place on 11th January, 1906, and the case was shown at a meeting of the Glasgow Medico-Chirurgical Society on the 26th January, 1906. This



FIG. 3.

Same case as Fig. 1. Knee fully flexed without dislocation. The scar where the tendon was attached is visible.

operation I find has been twice done by Haenel,¹ who referred to his cases during the discussion of Schanz's paper at a meeting of the Gesellschaft für Natur- und Heilkunde, of Dresden, in February, 1906.

The wound healed by first intention, and now (four and a half months later) the knee can be fully flexed without dislocation of the patella, the genu valgum is diminishing, and the tibial spine tends to disappear.

There is no inconvenience experienced by this girl from

¹ Haenel, discussion, *ibid.*

the alteration of the insertion of the semi-tendinosus. The risks of the operation are trivial compared with those involved in opening of the knee-joint.

Transplantation of the sartorius¹ has been more frequently done, but I think this muscle can have little power to pull the slipping patella inwards.

OUR MOTTO—"ΥΠΗΡΕΤΑΙ ΦΥΣΕΩΣ."²

By WILLIAM FINDLAY, M.D. ("GEORGE UMBER").

THE medicos intill the East
 Hae asked me for a taste o' rhyme,
 To celebrate their annual feast,
 And heartsome pass the social time;
 Sae I began a sang last week,
 Whilk may turn out a blaud o' prose;
 Its burden is twa words in Greek—
 'Υπηρέται and φύσεως:

The motto graven on our seal
 Around the heads, wi' laurel crowned,
 O' twa Scot's worthies, servants leal
 O' Nature's mystic page profound,
 Owre whilk they pored wi' rare ingine,
 As weel their science-record shows,
 Whase characters thir words define—
 'Υπηρέται and φύσεως.

And though lang since bright learnin's torch
 The brithers Hunter hae laid down,
 And passed in through the sable porch,
 Behind they left their prophet's gown,
 Whilk on sic worthy shouthers fell
 As Lister's wha his secret chose
 To Glasgow, by thir words, to tell—
 'Υπηρέται and φύσεως.

¹ Wullstein, "Eine neue Operationsmethode der kongenitalen Luxation der Patella," *ibid.* (Kongress der Deutschen Gesellschaft für Chirurgie, April, 1906.)

² Address to the Glasgow Eastern Medical Society on the occasion of its Annual Symposium, 12th December, 1906.

But Joe he was a Lon'on chiel,
His antiseptics here but born,
Sae when we got our Mather¹ seal,
Its face the Hunters mun adorn;
And G. E. M.—s, wi' learnin' nice,
In seekin' for a motto, chose
Thir magic words for their device—
'Υπηρέται and φύσεως.

I grant ye that we werna blate
At sic ideals to aim sae high,
But failure's e'en a nobler fate,
Than ne'er to mak an earnest try.
Nature's high-priests, her servants true!
'Tis thus the ancient axiom goes,²
Whilk words apply to me an' you—
'Υπηρέται and φύσεως.

"Ugh! servants o' your granny's mutch,"
I think I hear the sceptics say,
"Disguise't or no in Greek or Dutch,
It's public slaves we're night and day;
At every noweel blockhead's ca',
Wha has the bats or rinnin' nose;
Your twa daft words are just a blaw—
'Υπηρέται and φύσεως."

There's something in your bit retort;
Mankind are aft a thankless squad,
And doctorin' is no a' sport
Whare ye've to cater to ilk fad;
Saut to our kail we'll whiles no mak;
Watch as we may our *cons* and *pros*;
Waur grief, if thir twa words we lack—
'Υπηρέται and φύσεως.

¹ The widow of the late Dr. George Mather, author of *Two Great Scotchmen*, presented the Society with a seal in 1893.

² "I hope to be able to show you that these words *physician* and *physic* have relations with some of the very best and highest traditions of antiquity."

"For a series of indeterminable ages, . . . the tradition has continually existed that the *healer*, or physician, of the highest class ought also to be, in a very real sense of the word, a *naturalist*, or perhaps a man of science (physical science being, of course, understood)."

"He is, he must be (according to Hippocrates, in specially indicating the function of the *healer*), the servant of Nature—*υπηρέτης φύσεως*."

"Hippocrates, in Galen's opinion, was eminently right in calling the physician the servant of Nature; but this expression, he adds, will only apply to the true *healer*, and not at all to the mere *druggist*, who might more properly be called the enemy and adversary both of Nature and of the sick."—Sir W. T. Gairdner, M.D., LL.D., in *The Physician as "Naturalist"* (James MacLehose & Sons, Glasgow), 1889.

The picture has anither side
 On whilk it's saner far to look ;
 Our art inspire may healthy pride ;
 Disease be an entrancin' book.
 The man that maks 't his chiefest care,
 How thick or thin 'll be his brose,
 Thir words to him are but a snare—
 'Υπηρέται and φύσεως.

Then let us strive, come woe or weal,
 To live up to the high ideal
 Engraven on our worthy seal,
 As something earnest, something real :
 Slaves we may be, and drudge and drive
 To keep our bairns in claes and brose ;
 Thir words our hearts 'll aye revive—
 'Υπηρέται and φύσεως.

Our intellects they'll no let rust,
 Nor int'rests narrow get and blunt ;
 Our minds let gather slothfu' dust ;
 Growth o' ideas dwarf or stunt ;
 On We'nesday nights when we meet, syne
 Sae soon's our surgeries we close,
 Thir words 'll warm our hearts like wine—
 'Υπηρέται and φύσεως ;

As we'll wi' ane anither swap
 Our bits o' finds frae Nature lore,
 And, in our glee, our fingers snap
 At daddy care and wealth galore.
 A truth that's gleaned frae Nature's book,
 Mair precious is than gold to those
 Wha on thir words wi' rev'rence look—
 'Υπηρέται and φύσεως.

Our wee bits o' discoveries,
 The members, ane and a', invite
 To free discuss and criticeese,
 When ane, a kennin' mair o' light,
 That's closer got to Her his ear,
 On Nature's cunnin' volume throws ;
 Sae in thir words we pluck up cheer—
 'Υπηρέται and φύσεως.

We canna a', I ken, 'tis true,
 A Hunter or a Lister be,
 But in their spirit may pursue
 Our daily task, and, eident, see

A wee bit glint o' Nature's truth
She to her humblest servants shows,
If we thir words believe, forsooth—
'Υπηρέται and φύσεως.

As sunblinks mak the cauld, bleak lea
Look blithesome through an April show'r,
Sae when days hardest seem to dree,
And dark clouds round about us low'r,
A wee touch o' philosophy
Will gild the grey o' life to those
Wha in thir words a gospel see—
'Υπηρέται and φύσεως.

"But, losh!" I think I hear you say,
"Your sang a sermon has turned out;
And we the night met here to play,
Wi' dram and story, turn about;
It's out o' place this moral seal,
Whare wit and mirth blithe reams and flows;
May your Greek words gang to the deil—
'Υπηρέται and φύσεως."

If ye'll allow your bard a judge,
Dear G. E. M.—s! kind Nature, she
Her eident servants doesna grudge,
Ance in a while, a wee bit spree;
Sae let the dram and sang gae round,
While I this sentiment propose:
"Lang may thir words keep hale and sound"—
'Υπηρέται and φύσεως.

CURRENT TOPICS.

POST-GRADUATE CLASSES, GLASGOW ROYAL INFIRMARY.—During past year there have been three terms, one in January and February, a second in May and June, and a third in September and October. The number of those, not including members of the staff, who attended the classes was as follows:—In the winter term 43, in the summer term 26, in the autumn term, 68; total, 137. The aggregate number of meetings during the year was 255, and the subjects included general clinical medicine and clinical surgery and practical instruction in such special subjects as diseases of the eye, ear, skin, bladder and kidney, throat and nose, as well as in gynæcology, neuropathology, hæmatology, bacteriology, electro-therapeutics, and surgical technique.

The instruction was of a thoroughly practical character, rendered easy by the large clinical field at the Royal Infirmary, which affords abundant opportunities of studying disease in all its phases. Of this full advantage was taken by the teaching staff and by the practitioners who attended the various courses. In the endeavour to establish post-graduate medical classes the staff of the hospital, as well as the managers, are to be congratulated upon the marked success which has attended the work of their first year. The experience of the past year has shown that those who attended the winter and spring courses were drawn from the city and surrounding districts, whereas those who selected the autumn course were mostly from abroad or from considerable distances. For the former it is not necessary to concentrate the courses within a very limited time; for the latter it is desirable to limit the time, by grouping the subjects into a period of two, three, or four weeks.

The next winter term begins on Monday, 14th January, and the summer term on Monday, 22nd April, while arrangements for an autumn term will be made later on. Further particulars will be found in the advertisement page, but it may be said here that the course will include—(1) clinical medicine, (2) clinical surgery, (3) surgical diseases of the urinary organs, (4) diseases of the ear, (5) diseases of the eye, (6) diseases of the skin, (7) diseases of the throat and nose, (8) electro-therapeutics, (9) gynæcology, (10) bacteriology.

It will facilitate arrangements if those desirous of joining any of the classes will apply to Dr. Maxtone Thom, Superintendent of the Royal Infirmary, who will supply copies of the syllabus, and give any further information which may be desired.

COMPLIMENTARY DINNER TO DR. JOHN LINDSAY STEVEN.—On the occasion of his transference to the Western Infirmary, in succession to the late Dr. James Finlayson, after upwards of twenty years' work in the Royal Infirmary, Dr. J. Lindsay Steven was entertained by his old resident assistants to a complimentary dinner in Ferguson & Forrester's on Tuesday evening, 11th December, 1906. There were present eleven of Dr. Lindsay Steven's Royal Infirmary residents, and letters and telegrams of apology for absence, and conveying congratulatory messages, were received from almost all the others, several of these being now abroad, and others in London and the south of England.

Dr. Arch. Young was in the chair, and in the course of the evening proposed the toast of "The Chief, our Guest." He recalled the old days of his period as resident in the Royal, and spoke of Dr. Lindsay Steven's great enthusiasm for work, of his capacity for drawing out good work from all who were associated with him, of the generous acknowledgment he always accorded such work, and of the thoughtful and friendly spirit which characterised his relations with his assistants, both during their tenure of office and in their subsequent career. After reading the messages received from those not present, he concluded by referring to the honour bestowed on their old chief, in his being called on to succeed their revered teacher, Dr. Finlayson, and he maintained that in Dr. Lindsay Steven the Western Infirmary had secured a worthy successor to Dr. Finlayson. The toast was drunk with all the honours.

Dr. Lindsay Steven, in replying, expressed feelingly his appreciation of the compliment paid him, and stated how pleased he was to think that his old residents, to all of whom he owed much for their ever willing and loyal work, looked on him with feelings such as the chairman had given expression to. After speaking of many of the residents he had had during his tenure of office in the Royal, and particularly of those now abroad, he referred to the Baconian view that "a man lives again in the hearts of his friends"; and he was glad to think that in so many parts of the world his influence was regarded with friendly and affectionate feeling by his old residents.

A special menu card had been prepared, having on the front cover a portrait of Dr. Lindsay Steven, and on the back a view of the front of the Royal Infirmary. There was also printed on the card a complete chronological list of all Dr. Lindsay Steven's Royal Infirmary resident assistants.

ROYAL INFIRMARY APPOINTMENT.—Dr. Archibald Jubb has been appointed Extra Dispensary Physician in room of Dr. James Scott, promoted.

VICTORIA INFIRMARY APPOINTMENT.—Miss A. Louise M'Iroy, M.D., has been appointed one of the Gynæcologists to the Dispensary of the Infirmary.

ROYAL ARMY MEDICAL CORPS (VOLS.): GLASGOW COMPANIES.—The annual gathering of the Companies was held on 14th December, and took the form of a dance in the St. Andrew's Halls. There was a large turn-out of the members and guests—the dancers numbering upwards of 700. This is the first occasion, since the augmentation of the Companies in 1901, that the gathering has assumed this form; and the success with which everything went off will probably justify Colonel Beatson in repeating the experiment.

Each guest received a copy of the Corps' *Annual*. The principal article is one by Colonel Beatson dealing with the new "Field Ambulance" of the regular Army. This article is written in the lucid style which belongs to Colonel Beatson. The subject is one in which many details, not particularly interesting to civilian readers, are necessarily gone into. But the Colonel handles them so well that we believe few will lay down the paper without reading it to a conclusion. Attention is drawn to one striking fact, viz., that the official store-table and the camp plan do not tally. This will doubtless be noticed by the numerous critics of the War Office; but we understand that the matter will shortly be put right by the authorities. The minute way in which Colonel Beatson handles the subject shows how he has mastered the details of an organisation which he has very much at heart.

From the Progress Report we learn that the numbers have fallen since 1905. On 31st October of that year the strength was 698; on the corresponding date of 1906 it was 670. This is perhaps partly due to the fact that the recruits enrolled are necessarily men who will be capable of performing the special work of a Medical Corps.

There are numerous articles on Corps matters. One, which is well illustrated, deals with the subject of "Cycle Ambulances." Perhaps "grave and gay" are not wanting; of the latter we would mention Captain Wright Thomson's amusing contribution in the Glasgow vernacular.

Like former issues, this year's *Annual* is remarkable for the number of illustrations which adorn its pages. For many of these the Corps is indebted to the untiring pencil of Dr. A. F. W. Gunn, late Surgeon-Captain in the 4th V.B.S.R.

We congratulate the Editor, Captain Halliday, on the production of a Volunteer Magazine which it would be extremely difficult to beat.

SECOND "APPENDIX TO SQUIRE'S POCKET COMPANION."—The present volume is double the size of the first, and is divided into three sections instead of two as previously. Section A is a review of current medical and pharmaceutical literature, and covers the period between July, 1905, the date of publication of the first "Appendix," and October of last year. Section B familiarises readers with the special preparations of Messrs. Squire & Sons. The new section C deals with subjects which experience has shown to have a special interest to members of the medical profession, such as the imperial and metric weights and measures, a tabulated comparison of the chief standardised potent preparations of the British, German, and United States Pharmacopœias, with their doses, and a table of solubilities for about seventy-five substances holding position in the *British Pharmacopœia*, as well as about a hundred and twenty other substances in more or less general use.

We notice the statement made (p. 27), in connection with the gelatin treatment of aortic aneurysm, that "tetanus spores are killed by boiling the solution for three minutes." Some years ago Dieulafoy reported a fatal acute case after the use of gelatin serum which had been carefully prepared and boiled for more than half an hour. The injection was given on account of profuse hæmoptysis in phthisis.

Both appendices are presented free to members of the medical profession on application.

MEETINGS OF SOCIETIES.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.

SESSION 1905-1906.

MEETING XVI (*continued*).—11TH MAY, 1906.

The Vice-President, DR. J. WALKER DOWNIE, in the Chair.

IV.—PARATYPHOID.

BY DR. R. M. BUCHANAN.

As a result of observation extending over some time, it has appeared that there exists in our midst a type of illness which presents itself in the guise of typhoid fever, but which in reality is not that disease. The illness has come into prominence through the relatively large number of negative results obtained in the examination of specimens of blood sent to the laboratory by physicians for the diagnosis of typhoid fever, notwithstanding the fact that in many of these negative cases the notes of the clinical history given were such as might have been submitted from cases of true typhoid fever.

The existence of a disease simulating typhoid fever in its symptomatology, but differing in its bacteriology, has been in process of recognition by bacteriologists during the last eight to ten years under the name of paratyphoid. The symptoms in both diseases are so essentially alike that the diagnosis cannot be made with any certainty unless by bacteriological methods. Paratyphoid as a rule, however, is generally milder in type and shorter in duration than true typhoid, although the initial symptoms may be very severe. The ulceration of the bowels, which is such a characteristic and dangerous symptom of true typhoid, is usually absent in paratyphoid. The disease has been observed mostly in sporadic cases, but epidemics have occurred in America, Germany, and France. No cases have been recorded in Scotland, so far as I am aware, while in the last four years some six only have been reported in England, and one in Ireland.

As regards the discovery of paratyphoid a few historical cases may be cited.

Achard and Bensaude were the first to isolate a bacillus of the paratyphoid group in 1896 from a case with purulent arthritis, and a case of cystitis, both following illnesses regarded as typhoid. They applied the name "paratyphoïdique" to these infections. The earliest diagnosis of a case of the kind was, on the other hand, made in America in 1898 by N. B. Gwyn, who isolated an organism which he called "paracolon" bacillus, and which he found was agglutinated by the patient's blood with a dilution of 1 in 200, while no reaction occurred with typhoid blood.

In 1900 and 1901 Schottmüller published five cases having no relation to one another. Throughout, the cases were clinically typhoid with the typical roseolar eruption. From the blood, organisms of the paratyphoid group were separated and were distinguished by their chemico-vital activities and by the agglutination test.

In 1901 Kurth found a similar bacillus in the fæces of two out of five cases, and named it *bacillus bremensis febris gastricæ*, and regarded it as closely related to the bacillus of Gaertner. He found the serum of the patients agglutinated this bacillus in a dilution of 1 in 8,000, and had no effect on the *bacillus typhosus*. Clinically, the cases had a course similar to typhoid with rose spots.

Brion and Kayser¹ reported a case in which they found paratyphoid bacilli coincidently in the fæces, the rose spots, the venous blood, the urine, and purulent vaginal and urethral secretion. Clinically, the case presented splenic enlargement, abundant rose spots, and bronchitis. The serum of this patient agglutinated the bacillus in a dilution of 1 in 1,000.

Hünemann² gives an account of an epidemic of paratyphoid in a barracks. The infection appears to have been introduced by a soldier who was infected on furlough, and who passed through a slight illness with diarrhœa. The infection was evidently introduced into the water, and spread thereby. The bacillus was found in the fæces of one case, and in the urine of another, during convalescence. This bacillus was agglutinated with the blood of the cases in a dilution of from 1 in 1,000 to 1 in 2,000. The course of the illness was that of a mild typhoid with copious rose spots. The incubation period was very definitely determined to be about the same as for typhoid, and it was notable that the roseolar eruption appeared about the twenty-first day after infection.

It is interesting to see how this question of a disease

¹ *Munch. med. Woch.*, 1902, p. 611.

² *Ztschr. f. Hyg. u. Infekt. Krankh.*, 1902, Bd. 40, p. 522.

resembling typhoid cropped up in earlier days. Eberth¹ refers to an epidemic in Switzerland in 1878 which was doubtless due to the eating of diseased veal. The patients showed an illness more resembling typhoid than ordinary flesh-poisoning—notably splenic enlargement, and, towards the end of the first week, a roseolar eruption. On the other hand, the incubation period was shorter and the illness in its course much milder, with a mortality of only 1 per cent. As a result we find Hueppe questioning whether this was ordinary typhoid fever or an abortive form of it, or a disease similar to but distinct from typhoid, or whether typhoid fever exists in several different forms. Bollinger² drew attention to flesh-poisoning as a special form of infection, and its great similarity to typhoid, and that it could be considered as perhaps an abortive form of that disease.

A number of observers between 1900 and 1903, especially in America, Germany, and France, established paratyphoid fever as an illness, or *several illnesses*, quite separate and distinct from typhoid fever. It is not a new disease, but its recognition has only been rendered possible of late by virtue of new methods of bacteriological research.

The bacillus found in paratyphoid cases has not always been the same. Of the different bacilli which have been described, two types are commonly met with, and they have come to be known as Schottmüller's bacillus "A" and bacillus "B" respectively. They are very much alike, but "A" has affinities more nearly akin to bacillus coli; while "B," in a similar manner, stands in closer relation to bacillus typhosus. This is a convenient differentiation, but it must not be allowed to obscure the fact that these two bacilli are members of a group, and not the only organisms which may give rise to symptoms of a typhoid nature. They are closely related to the Gaertner group of bacilli—a relationship which at once suggests the possible origin of many cases of paratyphoid fever, namely, in flesh-poisoning.

A consideration of the results of the Widal test obtained in the laboratory during the past three years shows that the number of positive results has fallen very low in proportion to the negative ones. Thus in 1903, 1904, and 1905 the respective percentages of positive results were 46·8, 36·2, and 26·7, and for the first three months of 1906 the positive results only amounted to 12·3 per cent.

In view of these results, and of the fact that the clinical

¹ Volkmann's *Samml. klin. Vortr.*, 1883, Nr. 226.

² *Munch. med. Woch.*, 1881.

history submitted by medical practitioners in many of the negative cases was so characteristic of typhoid, the question presented itself as to whether such negative cases were of the nature of paratyphoid. Accordingly, for the past three years, attempts have been made to determine the nature of these cases by means of the agglutination tests, using the laboratory stock cultures of bacillus paratyphosus "A" and "B," bacillus paracoli, bacillus gaertneri, and various bacilli isolated from individual patients, but without any very conclusive results. Lately, however, the bacillus paratyphosus "B" has been agglutinated in a marked degree by the blood of two of the cases in question.

Dr. Adamson had a case under his care at the time, which appeared at first to be an irregular case of enteric, but which *Dr. Buchanan* had reported to be one of paratyphoid fever. *Dr. Adamson* had first seen the case, with another practitioner, about the eighth or ninth day, and the chief features were continued fever (but not of the usual enteric type, as it was daily intermittent, the temperature rising in the afternoon, falling in the evening a little, and going up highest at midnight, and reaching normal usually in the forenoon), a tremulous light-brown furred tongue, and three or four very vivid rose spots on the back. There were no signs in lungs or spleen, and the bowels were obstinately constipated. There was also slight tonsillitis. It was reported to *Dr. Adamson* that in a day or two there was an extraordinary eruption of spots, the patient being covered with them, and the throat was worse. On seeing the case a week later all spots were gone, the fever continued, the throat was very sore, and the tonsils covered with numerous white spots, suggestive neither of follicular tonsillitis nor diphtheria. A perchloride of mercury paint was ordered, and salol, in doses of 20 grains, thrice daily. Rapid improvement was established shortly after this. After 100 grains of salol had been given for two days, it was stopped, as the urine passed became greenish in colour. The temperature never rose above normal again. This was about the end of the third week of illness. *Dr. Adamson* noted the absence of the prostration that would have been expected in an enteric case of similar severity. There was some headache at the beginning, and marked flushing of the face. The attack was attributed to a bad oyster, eaten some days previous to initial symptoms. *Dr. Adamson* was indebted to *Dr. Buchanan* for his kind help in this case, and for drawing his attention to the true diagnosis.

Dr. James Carslaw expressed his special interest in Dr. R. M. Buchanan's contribution, because he had had one or two cases of paratyphoid under observation. A year ago a patient of his had passed through what was practically a mild attack of enteric fever, lasting five weeks; but numerous blood examinations failed to give Widal's reaction, and, although Dr. Buchanan could not find any agglutination with the paratyphosus organism then in his possession, the case was looked upon as paratyphoid. Recently a much more acute case of a similar kind had been under observation. Here, again, Widal's reaction was negative, but very marked agglutination was got by Dr. Buchanan with the bacillus paratyphosus "B." So far as Dr. Carslaw's experience went, the symptoms were practically the same as one might expect in enteric fever, and the only definite mark of distinction was the effect the blood-serum of the patient had on the different bacilli, indicating, of course, that the two illnesses are due to two different organisms. It was interesting, however, to know that the prognosis in paratyphoid was good.

Dr. Curstairs Douglas suggested that these cases of paratyphoid might explain the fact that the number of positive Widal's appear to be diminishing. He asked if there had been any fatal cases. He did not know of any, though the toxin was undoubtedly very virulent.

Dr. R. M. Buchanan, in reply, said that the chief features of paratyphoid were the marked severity of onset, the greater abundance of rose spots than in enteric fever, and the frequency of sore throat. The percentage of cases terminating fatally was from 1 to 3, and the lesions found at *post-mortem* were chiefly abscess of the lung or other pulmonary complication. The spleen was generally large. The toxin was particularly powerful, $\frac{1}{200}$ of a loopful of culture being sufficient to kill a guinea-pig.

V.—CASE OF CYSTIC DEGENERATION OF THE KIDNEYS.

BY DR. JOHN LINDSAY STEVEN AND DR. JAMES SCOTT.

Mrs. G., æt. 59, housewife, was admitted to Ward 8 of the Glasgow Royal Infirmary on 10th April, 1906, complaining of headache, drowsiness, and general weakness.

History of present illness.—For the past three months patient has been very drowsy, and has not felt fit for work. She associates these symptoms with a fall down stairs at the beginning of that period.

Her friends have told me that her colour is sometimes yellowish. A fortnight ago the symptoms became worse. She also suffered from severe headache and pain over the loins, and had to take to bed. She became very restless, and on the 8th inst. had a "shivering fit," and later in the day vomited excessively. She felt as if she were being choked. She rapidly got worse, and delirium supervened.

Her previous health has been generally good. At the age of 35, she was admitted to the Western Infirmary, when her illness was diagnosed as hysteria. Nine years ago she suffered from dragging pains in the right groin and back, passing down the right leg. Frequent and painful micturition followed about twelve months later. She next suffered from hæmoptysis (or hæmatemesis?), which lasted for seven days. This has not recurred. About this time a swelling appeared in the right side, but soon subsided. On 15th May, 1899, she was admitted to Ward 15 of the Glasgow Royal Infirmary, under Dr. Newman, on account of this pain in the right back.

Extract from Dr. Currie's report.—"The patient has a slight but sharp pain in the right back. The side is free from discomfort when she lies, but pain is felt in the inner aspect of the right thigh.

"The skin of the face is yellowish, but the conjunctivæ are clear.

"The heart and lungs seem normal. Hepatic dulness is normal.

"No dull percussion is elicited in the abdomen, but in the right hypochondrium, in the nipple line and above the line of the umbilicus, an object about the size of an orange can be palpated between the hands, back and front."

Extract from a letter from Dr. Mackinnon, of Drymen (22nd May, 1899).—"I regarded the swelling as of renal origin by a process of exclusion, as follows:—(1) It seemed to be entirely free from uterus or ovary; (2) it was deeply placed; (3) absence of intestinal disturbance. Facts against its renal origin:—(1) It proceeded too far towards the middle line; (2) the swelling now is not one-third of its original size. (During the past three weeks it has diminished very greatly; it was also very tender on pressure). (3) The urine at first contained very large quantities of albumen, which has gradually diminished. Reaction always alkaline. Microscopic examination revealed only pus, mucus, and triple phosphates."

Patient was dismissed without operative treatment, 12th Jnne, 1899.

Family history.—Her husband died of a tumour of the

stomach. She has had thirteen children, four of whom are now alive.

Present condition.—Temperature, 97·6° F.; pulse, 100; respiration, 30. Since admission patient has been delirious, but easily restrained. She can be roused sufficiently to answer questions. Her face has a distinct yellow tinge. It is deeply lined, and generally she looks like a woman of considerably over 60 years of age. The tongue has a brown, dry, caked appearance. The pupils are contracted. There is marked "subsultus tendinum" in the hands.

Urinary system.—The amount passed in the twenty-four hours measures 27 oz. It has a smoky tinge, an amber colour, and presents a whitish deposit. The specific gravity is 1012; on boiling, an abundant deposit of albumen is brought down. There is also an abundant blood reaction. Microscopic examination of the sediment reveals numerous granular casts, vaginal epithelium, and red and white corpuscles.

Circulatory system.—The apex beat is forcible, and is felt in the fifth and sixth interspaces, 4 inches to the left of the middle line. The cardiac dulness is not enlarged. On auscultation over the apex the first sound is prolonged, and the second only faintly heard. The sounds are free from murmur. The second sound is accentuated over the aortic area. The pulse numbers 100, is of small size, regular, and of good but not of markedly high tension.

Respiratory system.—Except for a few rhonchi nothing abnormal is noted.

The *abdomen* is flaccid, and allows of very free palpation. No abnormal swelling is made out. The liver, kidneys, and spleen are impalpable. The hepatic dulness cuts the sixth interspace, and measures 3 inches in the midclavicular line. Splenic dulness measures 2½ inches.

12th April, 1906.—Since admission the patient has been critically ill and delirious. The condition of the urine points to a subacute or chronic parenchymatous nephritis; last night vomiting of a foul-smelling, rather fæculent-looking fluid set in. There has, however, not been any distension of the abdominal wall, and the condition seems, on the whole, to be due to uræmia. The clinical history shows that the kidneys have been suspected for some years. Three grains of calomel, followed by an enema, produced only a few scybalous masses. The temperature has been practically subnormal since admission; the pulse very small and of low tension, numbering 100. At 1·40 P.M. to-day the patient had a rigor, which lasted about half an hour, and the temperature rose to 101·4° F.,

falling again quickly to 97.2° F. Nothing beyond increasing weakness was noted.

13th April, 1906.—Delirium continued, and patient died at 5 P.M.

*Pathological report by Dr. James Scott (14th April, 1906).—*The body is well developed, and fairly well nourished.

Thorax.—The pericardium contains a considerable quantity of clear serous fluid. The heart is not enlarged. It weighs 10 oz., and the muscular tissue is of good colour and consistence. The aortic and pulmonary valves are competent and healthy. The mitral and tricuspid valves present no evidence of acute or chronic endocarditis. The valvular



Right kidney.

Left laid open.

FIG. 1 (one-third natural size).

openings appear to be normal in size. The aorta and coronary arteries appear healthy.

Lungs.—The pleural cavities contain an excess of fluid. The lungs are cedematous, and the bases are congested. The right weighs 24 oz.; the left, 20½ oz.

Abdomen.—The liver is fatty, and weighs 42 oz. The gall-bladder contains fluid bile. The spleen is congested, and weighs 5½ oz. The intestines present nothing unusual.

Both kidneys present a striking cystic condition. The left measures 5½ inches in length by 3½ inches in breadth and 3 inches in depth, and weighs 17 oz. The right measures 3½ inches by 2½ inches by 1 inch, and weighs 3½ oz. The surfaces of both are studded over with numerous cysts varying

greatly in size and colour. In the left kidney there is one over 3 inches; the majority are about the size of a pea. The organs were hardened in formalin and then cut into (Fig. 1, p. 49). The section of the left (see photograph) shows three very large cysts, occupying about two-thirds of the whole kidney. The largest cyst measures $3\frac{1}{2}$ by $2\frac{1}{2}$ inches. Their contents have solidified into an opaque colloidal substance (? action of formalin solution). The capsules are thickened and closely adherent. The colour of most of the cysts is clear or opaque; in a few, however, it is almost black. The cysts in the right kidney are more uniform in size.

Microscopic sections (Fig. 2) show considerable increase

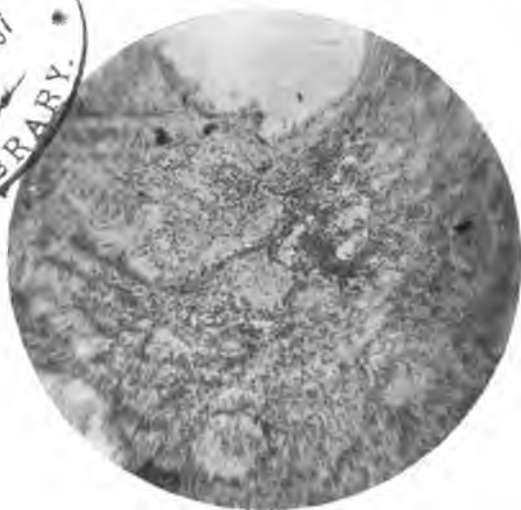


FIG. 2.

Shows marked sclerosis of the glomeruli, the cellular character of the interstitial tissue, and the presence of epithelial lining in the cysts.

in the connective tissue, with abundant round-celled infiltration. The glomeruli are in places crowded together and are generally sclerosed (see microphotograph). The tubules are also compressed and flattened. The epithelium of some (just above the centre of microphotograph) is seen to be composed of small cubical cells (atrophic type). In others the cells are enlarged, granular, and fatty. Some of the tubules show commencing dilatation, and in the definite cysts the epithelial lining is well marked.

Remarks.—In chronic Bright's disease the formation of cysts by dilatation of the convoluted tubules or of the glomeruli is frequent, but the formation of large cysts, as in the present case, is of rare occurrence.

However, the marked interstitial changes with a series of cysts, ranging from those of microscopic size to one of $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches, seems sufficient evidence for the classification of this case as one of unusual cystic formation from interstitial nephritis, rather than as a case of cystic transformation of the kidney of congenital origin.

The absence of cardiac hypertrophy in this case is remarkable, but the association of hypertrophy of the left ventricle with granular kidney is not so constantly found in women as in men. Heavy muscular work, or some other exciting cause, may perhaps be also necessary for the development of hypertrophy of the left ventricle.

Dr. Mary Hannay states that, in the insane, granular kidneys are frequently found without any hypertrophy of the left ventricle. Thus, in 84 *post-mortem* examinations in which marked granular kidneys were found in patients who had died at Gartloch Asylum, Dr. Hannay found hypertrophy of the left ventricle in only 20 cases. In these 20 cases there was no valvular lesion, no adherent pericardium, nor any lesion other than the granular kidneys to account for the hypertrophy.

This observation corroborates the theory that the strain of heavy muscular work is the determining factor in bringing about hypertrophy of the left ventricle in cases of granular kidney, as an insane person is not doing any work heavy enough to strain the heart to any extent.

SESSION 1906-1907.

MEETING I.—5TH OCTOBER, 1906.

The President, DR. JOHN LINDSAY STEVEN, in the Chair.

I.—CASE OF OBSTRUCTION OF THE ŒSOPHAGUS BY AN ULCERATING EPITHELIOMA WHICH HAD PERFORATED THE LEFT BRONCHUS AND CAUSED PULMONARY GANGRENE.

By DR. JOHN LINDSAY STEVEN AND DR. CHARLES WORKMAN.

Dr. Lindsay Steven, under whose care the patient had been during life, read the following clinical history of the case:—

W. M'K., æt. 49, a chemical worker, was admitted to Ward 3 of the Glasgow Royal Infirmary on 12th September, 1906, and died upon the 18th of the same month.

He was recommended to me by Dr. David M'Kail, of Bridgeton, who had diagnosed an obstruction of the Œsophagus, about 11 inches beyond the incisor teeth. On admission he complained of total inability to swallow anything, even fluid. When this was tested by asking him to take milk, it was found that the fluid was ejected about half a minute after it had been swallowed, and it was judged that practically none of the milk reached the stomach. On passing a bougie, the point was felt to come against a firm obstruction, about 10 to 11 inches from the teeth. After withdrawing the bougie he put up about an ounce of caseous purulent material, suggestive of discharges from an ulcerating surface.

He first began to experience some difficulty of deglutition about twelve months before his admission, but this was not very severe until nine months later, when the obstruction became urgent, and, finally, a week before his entrance to the infirmary, the dysphagia became complete. During all this time, and after admission, he experienced no pain, although he had become much emaciated and greatly debilitated. About three years before his admission he had a severe crush of the chest from some earth falling on him, and his own idea was that this accident had something to do with the onset of his illness. His social condition had always been fair. He had only been a chemical worker for ten months, and

previously had laboured in a brickfield. This occupation he believes to have been a healthy one.

Examination of the abdomen was negative except for the extreme emaciation of its walls. No tumours could be detected in the epigastric region. The chest was emphysematous in character, and the expiratory murmur was greatly prolonged. He had a loose cough, accompanied by a somewhat abundant frothy, purulent, ill-smelling expectoration. The day after admission an area of dull percussion was detected at the left base behind, extending upwards for a distance of 3 to 4 inches. The temperature was irregularly febrile or sub-febrile, and frequently normal for twelve or twenty-four hours at a time, the maximum records not being above 100° as a rule. The pulse-rate varied between 75 and 90. The urine contained pink urates, but otherwise presented nothing unusual.

In spite of carefully administered rectal feeding the patient rapidly sank, and died on the seventh day of residence. He had not been able to swallow anything during that period. He had no pain, and suffered chiefly from cough, severe weakness, and from thirst apparently more than from hunger. The question of attempting relief by the operation of gastrostomy was very carefully considered, and definitely set aside on account of the onset of gangrenous complications in the lung, evidence which was fully confirmed by *post-mortem*. In view of the fact that *post-mortem* cesophageal tumour was found to have perforated the left main bronchus, it is worthy of note that during his residence in the ward there never had been any urgent dyspnoea, or other paroxysmal respiratory attack.

Dr. Workman submitted the following report of the *post-mortem* examination, made on 19th September, 1906:—

"The body is considerably emaciated.

"The heart is somewhat atrophied; the aortic and pulmonary curtains are competent; these and the other valves appear healthy. There is only slight atheroma of the aorta and of the coronary arteries, but the latter are very tortuous. The muscular tissue of the heart wall is of good consistence and colour.

"The left lung shows consolidation of its lower lobe. In the posterior and middle part of this lobe there is a gangrenous abscess, which has almost burst into the pleura. Around the abscess the consolidation is due to an insufflation pneumonia. The right lung shows a purulent bronchitis with general emphysema.

"In the œsophagus, just opposite the bifurcation of the trachea, there is a large fungating ulcer, with two openings perforating into the left bronchus. The ulcer involves the entire circumference of the œsophagus for about $2\frac{1}{2}$ inches, and, to the naked eye, has the appearance of a squamous-celled epithelioma.

"*Abdomen.*—The liver and spleen are about normal in size, and appear a little congested, but otherwise healthy. The stomach is large, and contains greyish fluid, with some solid food matter. The intestine appears healthy. The kidneys are about normal in size, and show very slight interstitial nephritis.

"*5th October.*—Sections of the tumour are cut by the freezing microtome, and have been stained by hæmatoxylin and counter-stained by eosin or by Van Gieson's stain. They show that the tumour is an irregularly squamous-celled epithelioma, probably of rapid growth. Many of the cells show evidence of mitosis, and some contain peculiar inclusion bodies (?) or daughter cells.

"Lantern slides have been prepared, from negatives made by Miss Hannay, of the tumour, and also bromide positives."

II.—SPECIMENS FROM A CASE OF MITRAL OBSTRUCTION.

By DR. JOHN LINDSAY STEVEN.

The spleen and kidneys from the case were shown and the following account was read:—

Mrs. M'K., aged 63 years, a winder, was admitted for the first time to Ward 3 of the Glasgow Royal Infirmary on 2nd September, 1905, and dismissed much improved on 6th October, 1905. During this residence the complaint was of palpitation, shortness of breath, and swelling of the feet and legs, of about one year's duration. Breathlessness and palpitation were much aggravated on exertion, and the swelling of the lower limbs had been more or less persistent for a month or two before admission. She had once suffered from rheumatism, about twenty years before, and had been laid up for two or three weeks. All the larger joints were affected, and she was fevered. After this illness she never was able to walk up stairs with so much comfort as before, on account of being somewhat easily put out of breath, although until a year ago there had been no specially urgent dyspnœa. The patient has been married twice, and has had nine children, of whom three survive in good health. During her married

life also she has worked in a thread mill, standing at her machine from 6 A.M. to 5.30 P.M., with an hour and a half interval for meals.

On admission she was orthopnoæal, slightly livid, and œdematous in the lower limbs up to the knees. The apex beat was feeble and diffused, being palpable in the fifth intercostal space, about 6 inches to the left of the middle line. At the level of the fifth space the cardiac area extended from 1 inch to the right to 6½ inches to the left of the middle line, the upper border reaching the third rib. At the apex a loud blowing systolic murmur was present, which, in the course of residence, became much shorter and rougher. Systolic murmurs were also audible in the tricuspid and aortic areas, that in the latter being well conducted into the vessels of the neck. These murmurs did not change in character during residence. The urine contained a trace of albumen, but no casts, and the patient was dismissed much improved.

The patient was readmitted on 24th November, 1905, and dismissed improved on 22nd December, 1905. Her symptoms were the same as before, and had returned shortly after going home. The cardiac condition was practically the same as during the previous residence, but the apex beat was perhaps scarcely so far to the left (4½ inches). The murmurs in the different cardiac areas were the same as before. Dropsy was much more severe on this occasion, involving the trunk as high as the diaphragm. The urine had the following characters:—Deep amber colour; acid reaction; specific gravity, 1018; mucous sediment; fairly abundant albumen, but no blood, bile, or sugar. On microscopic examination a large number of leucocytes were seen, also numerous renal epithelial cells and tube-casts, granular and hyaline.

Under treatment by diet, digitalis, squills, calomel, and diuretin, the dropsy gradually disappeared, and the patient was sent home much improved, but with the physical signs as regards the heart practically unchanged.

On 18th June, 1906, the patient was again admitted suffering severely from dropsy, great lividity of the face and extremities, and some orthopnoæa. She had been unable to do any work since her last residence, although capable of moving about her house a little. The cardiac condition, both to percussion and auscultation, presented much the same characters as before, and the chief suffering of the patient was the extreme dropsy, especially of the abdomen, which prevented her even moving in bed with any degree of comfort. On this occasion she was treated by digitalis and alkalies, and by the use of Southey's

tubes, between 300 and 400 oz. of fluid having been drained from the lower limbs in this manner, besides nearly 200 oz. removed from the abdominal cavity. She was dismissed slightly improved on the 4th August, 1906.

On 17th September, 1906, she was readmitted with extreme anasarca and signs of cardiac collapse. From this she never rallied, and died six hours after admission.

Dr. W. G. Dun said that this case corroborated his opinion that the prognosis of mitral obstruction was good when the patient could take some care of herself when symptoms presented themselves, though otherwise they were apt to become steadily worse.

Dr. Lindsay Steven agreed with *Dr. Dun*, but remarked that when the obstruction began early in life, and the attacks were frequent and recurring, the case might succumb very soon.

III.—TWO CASES OF CHAUFFEUR'S FRACTURE (FRACTURE OF THE RADIUS IN STARTING AUTOMOBILES).

BY DR. GEORGE T. BEATSON.

[ABSTRACT.]

The fracture was usually caused by a "back-fire" when turning the handle at the front of the car when starting. The hand was forcibly bent backwards when it had a degree of ulnar deflection, and the radius was fractured. The line of fracture (illustrated by *x-ray* photographs) was transverse and fairly regular. It carried off the whole articular surface of the radius, or it might pass into the joint. In each case a triangular piece of bone was broken off, and included the styloid process. The symptoms were pain, swelling, and crepitus, but there might be no distinctive deformity. Both cases were treated with Carr's splints with early movement of the fingers. The splints were removed in three weeks, and practically no stiffness resulted. The author thought that such cases might be classified as Colles's fracture without deformity, and should make us more careful in excluding fracture on account of absence of deformity. The fracture might be prevented by grasping the handle with the knuckles downwards, as in that position the handles could be quickly released.

[This paper appeared in full in the *Scottish Medical and Surgical Journal*.]

IV.—LANTERN DEMONSTRATION ON FIBRO-MYOMATOUS TUMOURS
IN FEMALES.

BY DR. S. J. CAMERON.

Dr. Cameron gave a lantern demonstration illustrating the changes produced in the uterus by fibro-myomatous tumours and the complications which may be produced by them.

Slides were shown demonstrating the malignant changes which sometimes occur in the tumours or in the uterus itself. The minute and gross changes produced in fibro-myomata by myomatous and cystic degeneration were next demonstrated, and attention was drawn to the association of these changes with calcareous deposition in the tumour substance.

Mention was next made of the complications which might result from the presence of calcified fibroids, as well as the pathological changes produced in the tumour by acute and chronic torsion of the pedicle.

A series of slides were next exhibited, showing various pathological conditions met with in the Fallopian tube, the most interesting specimen of these being one of primary carcinoma. Some changes were shown which resulted in the tumour through the occurrence of pregnancy, and the influence of these tumours in complicating delivery was also noted.

Several other changes which had been met with were shown, and the demonstration ended with a series of slides illustrating the structure of uterine adeno-myomata.

Dr. Lindsay Steven thought it incorrect to speak of the conversion from a simple to a malignant tumour. Carcinoma was to be regarded as a separate affection rather than as a result of degeneration of a fibro-myomatous tumour. Degenerative processes going on in these tumours may tend to degenerative processes of the neighbouring epithelial cells, and so a subsequent growth may be produced.

Dr. Cameron, in reply, said that the term "malignant degeneration" of a fibro-myoma was not a very suitable one when one was considering the presence of an adeno-carcinoma in the tumour, inasmuch as the fibro-myoma was simply invaded by a carcinoma arising in the endometrium. He thought, however, that at some future date we might find that other sources existed. Thus, it might be proved that rest-cells derived from the Wolffian duct were capable of proliferation during the growth of a fibro-myoma, and in this way a malignant growth might result in the fibro-muscular tumour

itself. Again, Müllerian offshoots are present in some uteri, and these might undergo proliferative change during the formation of a fibro-myoma, so that from the earliest stages of growth the epithelial and fibro-muscular elements are interspersed.

MEETING II.—19TH OCTOBER, 1906.

The President, DR. JOHN LINDSAY STEVEN, in the Chair.

I.—PATIENT OPERATED ON FOR COMBINED EMPYEMATA OF THE MAXILLARY ANTRUM, THE FRONTAL, ETHMOIDAL, AND SPHENOIDAL SINUSES.

BY DR. J. GALBRAITH CONNAL.

Patient came with nasal obstruction and purulent discharge from the left nostril. In the left nostril the middle turbinal was greatly hypertrophied, and there was a profuse purulent discharge. The middle turbinal was removed, when pus was found coming from all the accessory cavities on the left side.

I showed the patient some time ago, and since then have opened the maxillary antrum from the canine fossa, with a counter-opening into the nostril, and have opened the frontal sinus from the outside.

The point I wish to draw attention to is, that in chronic cases it is more common than is generally acknowledged to have combined empyemata, two or more of the accessory cavities of the nose being involved, though it is rare to find all the accessory cavities on one side involved as in this case.

If the maxillary antrum is involved from tooth infection, the pus may be limited to that cavity; but if the infection is nasal in origin and chronic in type, I think the rule is to have more than one of the accessory cavities involved; not only so, but you may have the combined empyemata—bilateral.

II.—PATIENT FROM WHOSE LEFT NOSTRIL A LARGE SARCOMATOUS TUMOUR WAS REMOVED THREE AND A HALF YEARS AGO, IN WHOM THERE HAS BEEN NO RECURRENCE.

BY DR. J. GALBRAITH CONNAL.

The patient is a man, 59 years of age. I saw him for the first time in February, 1903, when I removed from his left

nostril a large sarcomatous tumour which extended from the anterior nares back to the posterior choana.

The tumour probably originated at the posterior extremity of the turbinal and spread forwards, becoming attached to the septum and to the floor of the nose.

It was removed at several sittings with the scissors and cold snare, the septal attachment being cut through with the electric cautery. The parts, after removal of the tumour, were thoroughly cauterised with the electric cautery. This was done over three and a half years ago, and there has been no recurrence. The man is in good health. Sections¹ of the tumour showed it to be spindle-celled sarcoma with an admixture of round cells.

Dr. Connal also mentioned that shortly after having treated this case he had had a young lady referred to him by her medical attendant for nasal obstruction, caused by a large tumour which plugged up the inferior meatus. The tumour was attached to the inferior turbinal and was extremely vascular. The sections showed a myxo-sarcoma.

It was treated in the same way as the previous case, with the cold snare, and the parts, after the removal of the tumour, thoroughly cauterised with the electric cautery. This was done three years ago, and there has been no recurrence.

III.—NOTE ON A CASE WHERE THE RADICAL MASTOID OPERATION WAS PERFORMED FOR PURULENT OTITIS MEDIA (WHEN SEEN FOR THE FIRST TIME PATIENT HAD A PRIMARY DIPHTHERIA OF THE EXTERNAL AUDITORY CANAL).

By DR. J. GALBRAITH CONNAL.

Dr. Connal's paper will appear as an original article in a future issue of the *Journal*.

IV.—CASE OF PURULENT OTITIS MEDIA, WITH EXTRA-DURAL ABSCESS AND SEPTIC THROMBOSIS OF THE SIGMOID SINUS.

By DR. J. GALBRAITH CONNAL.

A labourer, 21 years of age, who complained of deafness in both ears of some years' duration, also of discharge in both ears—in the right ear of two years' duration; in the left ear of six weeks' duration. He has had severe pain in the left

¹ Shown at the meeting.

ear for the past eight days. He also complained of "hissing" tinnitus, and occasional attacks of giddiness.

Personal history.—He had measles and whooping-cough when 6 years old; otherwise he was a strong, healthy lad, and was said to be a very steady fellow.

History of the ear mischief.—The right ear has been discharging for two years. It has never dried up. The left ear began to discharge six weeks before I saw him. The patient and his mother were quite positive that there was no discharge from the left ear till six weeks ago. They can assign no cause for the discharge. For the past eight days there has been severe pain in the left ear—the pain was referred to the left parietal region, and shooting down in front of the ear. Lately there has been pain at the back of the left ear over the mastoid process. The pain was so severe as to keep him from sleeping at nights. There has been sickness for the past week, and occasional vomiting for the past three days. He had a severe shivering (a rigor) which, he said, lasted half an hour on the day before he came to the dispensary.

The examination of the right ear showed that the tympanic membrane was inflamed, and that there was a small perforation in Shrapnell's membrane, and another perforation below the posterior fold of the membrane. The posterior perforation had a sloughy appearance. There was a bulging of the posterior wall of the canal, and the discharge was most offensive in smell.

In the left ear there was a perforation in Shrapnell's membrane, and another in the membrana propria behind the handle of the malleus. There was profuse foul-smelling discharge in the canal.

There was no swelling over either of the mastoid processes, but there was marked tenderness to pressure over the tip of the left mastoid, and down the neck in the line of the anterior border of the sterno-mastoid muscle. Hearing distance: watch—right, $\frac{1}{16}$; watch—left, $\frac{1}{16}$.

The temperature when I saw him was 101° F.; pulse, 92. The tongue was thickly coated with fur, and the breath was very offensive. The pupils were equal, large, and responded to light and accommodation.

The eyes were examined by Dr. Lewis M'Millan, who reported—"The optic discs are decidedly congested, and the vessels generally engorged—one, I think, tending to become tortuous. It looks to me like a commencing papillitis, and with headache, vomiting, and rigors is suggestive of brain mischief."

The patient was admitted to hospital, and early the following morning he had a sharp rigor, with a temperature of 104.4° F.

Operation.—The left side was chosen for operation, as it was considered to be the more likely to be involved. After reflection of the soft tissues there was no carious erosion, nor anything abnormal discovered over the cortex of the mastoid. The radical operation was performed. The bone of the mastoid process was hard and sclerosed, the antrum was deep-seated over the tegmen, and between it and the dura mater foul-smelling pus was liberated. The dura was ashy-grey in appearance. On working backwards over the sigmoid sinus there was a free escape of pus. The sinus was exposed for about 1 inch of its length, but as it appeared healthy it was decided to do nothing further in the meantime.

After the operation the temperature fell to normal, but the following day it rose, and two days later he had a severe rigor, with a temperature of 105.6° F.

That same morning the left internal jugular was ligatured. The mastoid wound was enlarged downwards and backwards. On enlarging the wound there was an escape of some pus from the soft tissues below and behind the mastoid, suggestive of a Bezold's perforation of the mastoid—that is, where pus bursts through from the vertical cells of the mastoid into the digastric groove. The sigmoid sinus was further exposed, and then split open. It was found to be filled with solid greyish-looking clot. The thrombus was cleared out until there was free hæmorrhage, and then the sinus was packed.

The after-history is that the temperature kept high, with marked oscillations. Friction was detected first over the left lung. The expectoration became rusty-tinted. The patient died on 5th June.

The *post-mortem* examination was done by Dr. M'Laren (to whom I am indebted), and, put shortly, there was effusion in both pleural cavities—multiple abscesses in both lungs, but more abundant in the left lung. There was purulent clot in the vein and left lateral sinus, extending to the torcular. On the right side the sinus was normal. Otherwise, than as stated above, the brain and membranes were healthy.

I have to thank Dr. M'Millan for examining the eyes, and Dr. Barr and Dr. M'Coll for seeing the case with me in consultation, and for their kindly help.

The main points in the case are:—That there was foul-smelling discharge in both ears—undoubtedly chronic in the right ear—but with a history suggestive of recent attack in

the left ear. On the left side there was tenderness to pressure over the tip of the mastoid, and on this side the radical mastoid operation was performed. There was an extra-dural abscess with foul-smelling pus, and a grey, sloughy appearance of the dura mater. There was pus liberated over the sigmoid sinus, but, as the sinus appeared healthy nothing further was done. Three days later, after a sharp rigor, the internal jugular vein was ligatured, and the sigmoid sinus split open, and purulent clot cleared out, till free bleeding was established.

On looking back over the case, it probably would have been better if the internal jugular vein had been ligatured at the time of the first operation. Still, one sees cases of purulent otitis media with oscillating temperatures, and even rigor, where, with liberation of the pus over the sinus, all the symptoms disappear, and the patient does well without ligation of internal jugular vein or opening the sinus.

Dr. Walker Downie said that he was pleased to have the opportunity of seeing *Dr. Connal's* cases. He himself had, at a demonstration given at a meeting of this Society in the Western Infirmary last session, showed several cases of supuration of the various nasal accessory sinuses, and amongst them two in which the sphenoidal sinuses were exposed. He had then drawn attention to the fact that, up till recently, the sphenoidal sinus was looked upon as well-nigh inaccessible, whereas by the removal of the middle turbinal bone it was readily reached, opened, and cleaned out. The occurrence of primary diphtheria in the external auditory canal in one of the cases interested him, for while engaged in the investigation of an epidemic of diphtheria in London in 1883, he had seen two cases. When it does occur there is always a previous middle-ear suppuration which, by causing erosion of the meatal walls, forms a suitable surface for infection. It is a very rare complication and is not serious; altogether different from those cases where the ear is affected secondarily to faucial diphtheria. There the disease spreads from the fauces to the pharynx and up the Eustachian tube. There a large area of mucous membrane is implicated, rapid absorption takes place from the extensive surfaces, and in pre-antitoxin days such a case was almost certainly fatal.

Dr. W. S. Syme said that in treating disease of the sphenoidal sinus he had experienced the usual difficulty in maintaining the opening into this cavity made by removing its anterior wall. For this purpose he used a sharp spoon with a long

handle, so that the operation could be controlled by the eye with the aid of reflected light. The lower part of this wall was so hard that the punch had seemed to him to lack the necessary strength. It slipped upwards. By using the spoon more force could be brought to bear, and by taking care to work downwards the thin superior wall of the cavity was not endangered. To make the opening as large as possible it was necessary to break down the posterior ethmoidal cells which overlapped the anterior sphenoidal wall in its external part. Lewis and Turner, in the *Edinburgh Medical Journal* for November, 1905, have found that in the majority of cases the organisms present in the antrum showed that the infection had spread from the nasal cavity, and not from the alveolus as was formerly believed. Clinically he (Dr. Syme) had formed the opinion that the ethmoidal labyrinth was usually, and probably primarily, affected with the maxillary antrum, so that for the past year or more he had at the same time curetted the ethmoidal cells. At the meeting of the British Medical Association at Toronto in August last, Tilley advocated the same procedure, part of which could be carried out through the opening into the antral cavity.

Dr. Christie said that the maxillary antrum was fairly often alone affected, and could often be cured simply by washing out the cavity.

Dr. J. Stoddart Barr said he thought the case of sarcoma was specially interesting. It was difficult to be sure of its origin, but he thought it was more likely to have arisen from the septum than from the turbinal bone. He asked *Dr. Connal* what operation he had performed when opening into the frontal sinuses.

Mr. Arch. Young referred to the case of septic thrombosis of the lateral sinus, and particularly to the operative treatment described by *Dr. Connal* as carried out, viz., ligation of the internal jugular vein below, and removal of clot in the opposite direction until free hæmorrhage occurred. He said that while the former procedure might be admitted as justified, and quite reasonable, with a view to cutting off the septic focus above from systemic spread along the vein in a downward direction, the latter procedure was, in his opinion, unsound in theory, and likely to be disastrous in practical effect. He had pointed out on a previous occasion, at a former meeting of the Society—and acted successfully on the lines suggested—that at the extremity of the clot in the sinus there was almost certainly a layer of a non-infective character which, if left undisturbed, would effectively check gross systemic

spread in its direction. To disturb this he believed to be unsound practice. He believed it was best to lay open the sinus freely, relieve tension, allow of liquefied clot getting ready egress, when, as in an ordinary abscess, the infective focus tended, in most cases, to limit itself. Free removal and packing were procedures eminently calculated to encourage systemic infection.

The *President* remarked that, to the general physician, there were two points which were of interest. As to the special points involved he could say nothing. It was certainly, however, of general interest that there should be no recurrence of sarcoma for so long a period. Such long periods of immunity were not common in the experience of the general physician. He was also desirous of pointing out that the term septic pleuro-pneumonia must be interpreted with due care. This lesion was in no sense to be regarded as of the nature of pneumonia as met with in the practice of the physician. It was a septic inflammation of the lungs, and would be better designated pleuro-pneumonitis. The term pneumonia should be confined to specific lobar pneumonia.

Dr. Connal replied that with regard to the sarcomatous tumour in the nose, he was of opinion that it originated at the posterior extremity of the turbinal, and spreading forward became attached to the septum and to the floor of the nose. In the operation on the frontal sinus he had done what might be called a modified Ogston-Luc operation, making the incision of the line of the eyebrow, entering the frontal sinus, and enlarging the fronto-nasal duct. By this operation there was less deformity than by Killian's operation, though the latter often gave better results. He thought it was more common to meet with combined empyemata in chronic cases (excluding acute cases), and here the infection was from the nasal chambers.

(The report of this Meeting will be continued in our next issue.)

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.

SESSION 1905-1906.

MEETING VI (*continued*).—12TH MARCH, 1906.*The President, PROF. ROBERT MUIR, in the Chair.*IV.—CASE OF CHRONIC LYMPHATIC LEUKÆMIA¹: SEQUEL, WITH
POST-MORTEM FINDINGS.

BY DR. J. W. FINDLAY AND DR. L. FINDLAY.

The history of A. P., subsequent to his being shown to the members of the Glasgow Pathological and Clinical Society, can be soon told. On 9th May, 1904, he was so feeble and breathless that he could not wash his own face. Thereafter he steadily improved, and on 9th June he went to Tarbert, where he resided for three weeks, and where he made a point of being out in the open air as much as possible. This sojourn at the seaside did him a great deal of good, and he came back quite fit for a three-mile walk. This improvement in his condition persisted, and was further enhanced by another residence at the seaside (Rothesay) for the last three weeks of September. As winter came on, however, his bronchitis commenced to trouble him, his strength gradually ebbed away, and breathlessness became again oppressive. During the last fortnight of his life he was a prisoner in the house, and, regardless of advice to remain in bed, spent several hours every day, sitting well wrapped up, at an open window. He went to bed early on the evening of 2nd March, 1906, feeling unusually done up, and early next morning complained of severe abdominal pain. He twice rose and passed copious black motions—he was taking iron medicinally. On attempting to rise a third time, he found himself unable to do so, and a black fluid motion was passed in bed. He continued to complain of severe abdominal pain, and died three and a half hours after the pain first commenced.

The improvement and relapse in this case are well reflected in the behaviour of the red blood corpuscles and hæmoglobin

¹ See *Transactions of the Glasgow Pathological and Clinical Society*, vol. x, p. 78.

percentage. It seems remarkable that the number of white corpuscles should have remained so near the same figure all the time, though a noteworthy fact is that the last count was the highest. The differential counts might almost be described as identical throughout. The maximal and minimal percentages of small lymphocytes were 96 and 89, while the maximal and minimal percentages of both large and small lymphocytes were 98·1 and 96·9.

Arsenic.	Date.	Red Cells.	White Cells.	Hæmoglobin.
	April 25, 1904.	1,750,000	152,500	...
	May 1, 1904.	1,342,600	334,800	25·5
	" 8, 1904.	1,424,000	568,660	30·0
	" 15, 1904.	1,474,660	542,400	22·5
	" 23, 1904.	1,630,000	391,700	30·0
	June 5, 1904.	1,235,200	394,400	40·0
	July 3, 1904.	1,924,960	384,710	55·0
	Aug. 7, 1904.	1,881,300	363,480	55·0
	Sept. 4, 1904.	1,940,625	342,900	55·0
	Oct. 2, 1904.	2,327,500	446,166	65·0
	" 30, 1904.	2,187,500	437,500	55·0
	Nov. 27, 1904.	2,020,000	430,000	55·0
	Dec. 24, 1904.	1,710,000	470,625	50·0
	Jan. 29, 1905.	1,810,937	358,360	45·0
	Feb. 26, 1905.	1,091,350	605,800	22·5

During the period he was under observation, we had abundant opportunity of verifying the correctness of his statement about the marked fluctuation in the size of the lymph glands. The diminution in the size of the lymph glands did not always coincide with improvement in his general condition, and, during the last month of life, it was noticed that the glands in all regions were getting smaller, and were, indeed, less enlarged at the time of his death than

we had ever seen them. Coincidentally with this diminution in the size of the lymphatic glands, it was made out that the spleen became harder and larger, reaching four instead of three fingerbreadths below the costal margin; the liver likewise increased in size, measuring $7\frac{1}{2}$ inches in the nipple line, in place of the 6 inches it had formerly stood at. No fresh sets of lymph glands became involved, and, though individual glands got smaller and even ceased to be palpable, at no time did any

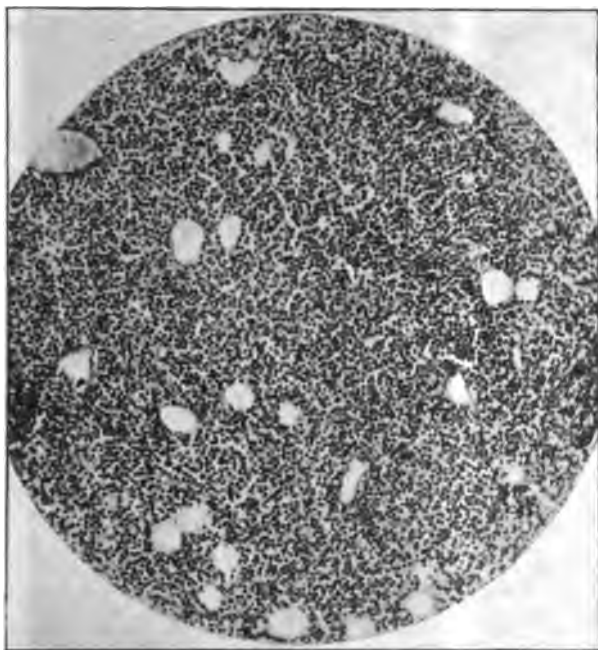


FIG. 1.

Section of femur-marrow from case of A. P., showing very extensive lymphatic infiltration.

set of glands, once involved, altogether disappear. In October a V.S. murmur appeared at the aortic, pulmonic, and mitral areas, and remained appreciable till he died. The tenderness over the sternum, so very marked a feature when he first came under observation, disappeared and reappeared in a quite inexplicable fashion. From time to time minute hæmorrhages occurred in the hard palate, but apart from these there were no bleedings to our knowledge.

It may be questioned if the improvement was due to the arsenic he received. He never proved very tolerant of the drug, quickly developing conjunctivitis, diarrhœa, herpetic eruptions, and tingling sensations in his feet and hands. His intolerance, moreover, seemed to increase as time went on. The benefit derived from residence out of Glasgow was, however, striking and unequivocal, and, had his means permitted of it, he would never have returned to the city.

The immediate cause of death was, we believe, cardiac failure. A tendency to diarrhœa was well marked throughout, and no doubt this final attack largely contributed to the fatal issue.

Post-mortem examination.—There was a fair amount of subcutaneous fat, and slight œdema of lower limbs.

The heart weighed 8 oz., and was the seat of fatty infiltration and degeneration, and had all its cavities, with the mitral and tricuspid orifices, dilated. The right auricle was especially dilated, and had a thin fasciculated wall, through which blood with fine air-bells could be seen. All the valvular cusps were slightly thickened, and the aorta was the seat of a moderate degree of soft atheroma. There were dense pleural adhesions at the bases of both lungs, where there was considerable œdema. The anterior margins of the upper lobes of both lungs were markedly emphysematous.

All the lymphatic glands throughout the body—neck, axillæ, mediastinum, and abdomen—were enlarged. The greatest enlargement obtained in the abdomen; some of the retro-peritoneal set behind the aorta and the iliac groups had quite the size of tangerine oranges. The mesentery, with its enlarged glands, gave the appearance of a large nodulated tumour, and on dissection the individual glands were found faceted, fitting against one another like the carpal bones. There was no matting together of the glands, which had a soft, almost fluctuant consistence. Their fresh section had a greenish-yellow colour, with hæmorrhages here and there, but nowhere was there any evidence of caseation or suppuration.

The parietal layer of the peritoneum was the seat of numerous punctiform hæmorrhages. The liver weighed 52 oz., and was markedly fatty. The lobules stood out very distinctly on fresh section, and here and there could be seen small, pale, pinhead-sized areas, due to lymphocytic accumulations. The liver gave a most marked hæmosiderin reaction. The gall-bladder, which was contracted and devoid of bile, had a thickened wall and contained four gall-stones. The spleen,

which was uniformly enlarged, weighed 32 oz., and had a thickened capsule, with numerous adhesions over its surface. It had a firm consistence, and on section showed a mottled appearance. The Malpighian bodies were obscured by the abundant pulp, throughout which were irregular pale areas, patches of congestion, and also of hæmorrhage; the last varied in size from that of a millet-seed to that of a split pea. The spleen contained a considerable amount of free iron, especially in the cortical region. The kidneys were of normal size. They showed a certain amount of interstitial and arteriosclerotic change, with pale areas in the cortex, due to lymphocytic accumulations. The suprarenals were pale in colour, but otherwise normal in appearance. The pancreas was also paler and flatter than normal, having been pressed between the mesenteric and retroperitoneal sets of glands.

The ribs were unduly soft and porous, and the marrow was abnormally red and fluid. The marrow in the shaft of the right femur was in great part pale and firm, like fat, but here and there were dark red areas of a cream-like consistence.

Histological examination of the various tissues revealed the usual changes found in this disease, viz., an infiltration of the loose areolar tissue and fibrous stroma of the various organs, with lymphocytes (most marked in the kidney), and also an atrophy of the gland tissue immediately surrounding these accumulations. The cells composing these infiltrations were, moreover, found to be of a size and nature similar to the lymphocytes observed in the circulating blood during life, as also in the vessels in the various sections. The lymphocytes in this case were for the most part medium-sized, and nowhere could we be sure of proliferation by karyokinesis. The spleen and glands were markedly altered, and had a most uniform appearance in sections, the normal structure having been entirely destroyed. The bone-marrow of the femur was also altered, in so far as it had become of the lymphoid type. The normal fat was almost wholly absent, having been replaced by a tissue similar to what was seen in the lymph glands, so far as the cells and their arrangement were concerned, though the stroma was less abundant and the capillaries were less numerous. The rib-marrow was found to be composed in great part of non-granular cells; 95 per cent of the colourless cells were of this nature. Red blood corpuscles were very scanty in the femur-marrow, except in the red areas, and of those present very few were nucleated. In the rib-marrow, on the other hand, 20 per cent of the red blood corpuscles

were nucleated. In the femur-marrow was much crystallised blood pigment, but no hæmosiderin could be detected either by the naked eye or microscope.

Remarks.—The appearances met with in this case are those commonly found in chronic lymphatic leukæmia. One feature of special interest, however, is the very marked hæmosiderin reaction afforded by the liver, since, according to Muir, "the liver cells do not usually contain pigment granules which give this iron reaction."¹ Here, however, the reaction is as striking as that met with in pernicious anæmia. It might be asked whether the administration of small doses of iron during the last five days of life caused this deposition. Such a question, however, is only raised to be at once dismissed, for "the observations of Kobert, of Kalm, of Glavecke," and of Hunter also, "all agree in showing that the richness of the liver in iron is in no way affected by the administration of that drug by the mouth."² Besides, Stockman³ and Hunter⁴ have placed on record certain cases—but not all—of leukæmia in which the liver in richness of iron approached that of pernicious anæmia. It is asserted, too, by Gulland and Goodall⁵ that in cases of acute lymphatic leukæmia there is more hæmosiderin of storage variety in the liver than in cases of pernicious anæmia. It must be concluded, then, that there has been here a considerable increase in the hæmolytic function, a view still further supported, perhaps, by the presence of a plus colour index, as also by the exceedingly low hæmoglobin percentage and red blood count.

V.—CASE OF CHRONIC LYMPHATIC LEUKÆMIA.

By DR. J. W. FINDLAY.

T. H., aged 58, was admitted on 9th August, 1905, to the wards of the Glasgow Royal Infirmary, under the care of Dr. T. K. Monro, to whose kindness I am indebted for permission to report this case.

History of present illness.—Patient had always been healthy previous to November, 1903, when he commenced to lose strength. Shortly afterwards he received an injury to his left

¹ Clifford Allbutt's *System of Medicine*, 1898, vol. v, p. 648.

² W. Hunter, *Pernicious Anæmia*, 1901, p. 78.

³ R. Stockman, *British Medical Journal*, 1896, vol. i.

⁴ W. Hunter, *loc. cit.*, pp. 101, 102.

⁵ Gulland and Goodall, *Journal of Pathology and Bacteriology*, January, 1905, p. 139.

side, and following this there appeared "crops of boils" all over his belly. From November, 1903, till April, 1904, he gradually became weaker, and small tumours developed on the under surface of each upper eyelid, so that ultimately his upper lids came to project so far downwards that he could no longer see objects above him. In March, 1904, these tumours were removed at the Glasgow Eye Infirmary by Dr. Meighan, who has kindly informed me that Dr. Leslie Buchanan, pathologist to the institution, after a microscopical examination, diagnosed them as lymphomata. In June, 1904, he consulted a doctor on account of a pain in the lower part of his abdomen, and he was then told that he had an enlarged spleen and an abdominal tumour below the same. Under medical advice he took to bed and remained there till September. Considerable improvement set in and he kept remarkably well till December, when he "caught cold and collapsed." From January, 1905, till March, 1905, he was again under medical supervision and treatment, and again improved very considerably; the spleen was considered to have diminished in size. Shortly afterwards, however, he began to lose ground, but managed to get about till June, 1905, when he was compelled to take to bed. Boils once more appeared, a swelling developed in his right lower eyelid, and he found that the splenic enlargement had increased.

He has never suffered from headaches. A slight cough, unaccompanied by spit, has been present for a long time. He has suffered much from constipation during present illness, but has never had attacks of diarrhoea. His urine, he declared, never contained blood, and there have been no bleedings from nose, stomach, lungs, or into the skin. He has had "bleeding piles" for the last thirty-eight years, and the hæmorrhage from this source has neither been better nor worse since the present illness began. He has never observed any swelling of his feet. Palpitation, breathlessness, weakness, and dull pain in the region of the enlarged spleen have troubled him throughout. Never had pains in his bones. He had never suffered from venereal disease, and had never been abroad.

Condition on admission.—Patient was much emaciated, and his skin and mucous membranes exhibited a marked degree of pallor. His muscles were small and flabby. There was but moderate enlargement of the posterior cervical lymph glands on both sides—only one gland was as large as a walnut. The submaxillary glands, the axillary, and both sets of the inguinal glands showed but slight enlargement. Enlarged mesenteric glands were easily made out, and the left iliac glands formed

a very considerable nodular swelling at the lower end of the spleen. No enlarged glands were detected in the right iliac region. The popliteal and cubital glands were not palpable. The enlarged superficial lymph glands were discrete, and all felt fairly firm.

The spleen was greatly enlarged, hard, and freely movable. Its anterior border, which presented a well-marked notch, extended almost an inch to the right of the middle line, and the lower end was made out to be 4 inches below the level of the umbilicus. The spleen, though the seat of occasional spontaneous pain, was not at all tender. The liver was enlarged and felt remarkably soft; the upper border of dulness was in sixth space in nipple line, and the lower border of the liver was 4 inches below the costal margin.

The lungs were considered to be the seat of emphysema and bronchitis, and pleural thickening was diagnosed at right apex. An examination of the heart revealed no abnormality. There was no dulness over the manubrium to suggest enlargement of the thymus. Neither the sternum nor any of the other bones were tender. The thyroid gland was not enlarged. There was very great hypertrophy of both tonsils, which came in contact a little to one side of the middle line. The whole palate, but especially the softer portion, was greatly thickened. Patient declared that this condition of his throat had existed since boyhood, that he had always had difficulty in swallowing, and frequently had had tonsillar abscesses opened. The right lower eyelid was the seat of a very considerable, pale, and firm thickening—this was regarded as an overgrowth of lymphoid tissue. Urine contained a trace of albumen, but neither blood nor sugar. His fundi, and indeed the entire nervous system, were found to be normal.

On 16th August the following blood count was obtained:—Red corpuscles, 3,475,000; white corpuscles, 92,000; and hæmoglobin, 50 per cent. This gives a ratio of white to red of about 1 in 37, and a minus colour index. The lymphocytes were, on the whole, of a size intermediate between large and small, but gradations were numerous. A differential count showed 95 per cent of lymphocytes, 3·9 per cent of polymorphonuclears, 0·05 per cent of eosinophiles, 0·55 per cent of transitionals, and 0·1 per cent of mast-cells. A purpuric eruption was detected over the upper part of the chest on 18th August, and on the 21st some œdema of the leg was noticed. Patient proved very intolerant of arsenic, and got progressively weaker. On 6th September a differential count by Dr. Fraser showed 95·4 per cent lymphocytes and

3·2 per cent of polymorphonuclears. On 15th September a blood count gave 4,112,500 reds, 128,400 whites, and 50 per cent of hæmoglobin; of the whites, 85·9 per cent were lymphocytes, 11·3 per cent polymorphonuclears, and 1·9 per cent transitionals. On this same day the tonsils presented a slough on their mesial aspects, and two days later a large slough separated spontaneously from the right tonsil, causing rather alarming hæmorrhage. Portions of slough were cut away from the left tonsil, and later on the entire slough came away, and separation was again followed by hæmorrhage. The removal of these sloughs effected a considerable improvement in patient's condition, his breath ceased to have the nauseating fœtor, and though a considerable amount of hypertrophied tonsil remained, he had now quite a capacious aperture at the back of his throat, and swallowed with ease. On 30th September he began to complain of pain in the left side of his neck, and quickly a cellulitis developed and spread to the other side. With the onset of the cellulitis, the temperature, which had hitherto been normal or subnormal, became pyretic. Patient rapidly lost strength, and died on 4th October.

On 1st October the reds numbered 2,537,000, the whites 144,000, and the hæmoglobin was estimated at 32·25 per cent; of the whites, 96·8 per cent were lymphocytes, 2·2 per cent polymorphonuclears, and 0·7 per cent transitionals.

During the last month of his life the spleen was observed to steadily diminish in size, and on 2nd October the right border was situated along a line $2\frac{1}{2}$ inches to the left of the middle line, while the lower border only reached to an inch and a half below the level of the umbilicus. No difference in the condition of the superficial lymph glands was noted. The abdominal lymph glands, however, enlarged very considerably under observation. From time to time small boils appeared on the neck, scalp, and left wrists. The rate of coagulation of the blood was estimated on one occasion by Dr. H. H. Borland, and was found to be about normal—at 18·5° C. 4 m. 40 secs.

The *post-mortem* examination was carried out by Dr. James Scott, and the following is extracted from his report:—

"The heart weighed 10 oz., and had very little superficial fat. The coronary arteries were slightly atheromatous, and the heart muscle was in a condition of brown atrophy. The mitral valve showed some thickening of its cusps and some constriction of its orifice. Enlarged glands were encountered in the mediastina.

"Liver was enlarged and fatty, and weighed 71 oz.; in the

centre of the right lobe was a round, white, lymphocytic mass, the size of a small marble. Spleen was much enlarged and was exceedingly firm; it weighed 4 lb. The capsule was greatly thickened, and throughout the organ were small hæmorrhagic foci. No pale infarctions were seen. Mesenteric glands were enormously enlarged, and appeared to have fused with one another. The line of demarcation between some glands was undoubtedly lost, while elsewhere there was only the merest hint of a capsule or fibrous band separating the enlarged glands; in other places, again, the glands were quite obviously discrete. Kidneys had unduly adherent capsules, the removal of which left a granular surface. A few hæmorrhages were seen in the mucous membranes of the pelves. The kidneys weighed 11 oz.

"In the ileum the Peyer's patches were unduly conspicuous, but were not strikingly enlarged. At the extreme lower end of the ileum, and abutting on the ileo-cæcal valve, was an elevated nodular mass of lymphoid tissue, situated in the mucous membrane and not at all ulcerated. This mass—in all probability built up on a Peyer's patch—measured a little over an inch and three-quarters in the long axis of the bowel, and about an inch in a transverse direction. The vermiform appendix was greatly thickened from an increase of its lymphoid tissue, and its small lumen was filled with a thick, cream-like fluid. Apart from a few small hæmorrhages in the soft membranes, nothing abnormal was detected in the brain. The marrow in the shaft of the femur was partly red and partly of the colour of vaseline. The rib-marrow did not appear abnormal."

Histological report by Dr. Leonard Findlay.—The histological findings in this case were of a nature similar to those observed in the other, with, however, one or two important differences, chiefly as regards the degree and distribution of the leukæmic lesions. The various organs revealed infiltration of the areolar tissue and fibrous stroma with lymphocytes, and the spleen and glands showed the same uniformity of structure. Many of the mesenteric glands had fused together; in places individual glands could only be distinguished from one another by the more dense packing of the lymphocytes and a more abundant fibrous stroma at the peripheries. In the liver there was distinctly less lymphocytic accumulation in the portal areas; on the other hand, there was a slight general increase of lymphocytes between the two rows of hepatic cells. The lymphocytic nodule in the liver showed, towards its margin,

marked cirrhosis, with an apparent numerical increase of the finer bile-ducts round about. In this nodule there was distinct evidence of proliferation of the lymphocytes by karyokinesis. Neither the liver nor the spleen showed the slightest trace of hæmosiderin, which was such a prominent feature in the former case. There was a great increase of the lymphadenoid tissue in the ileum, and the nodular mass near to its cæcal

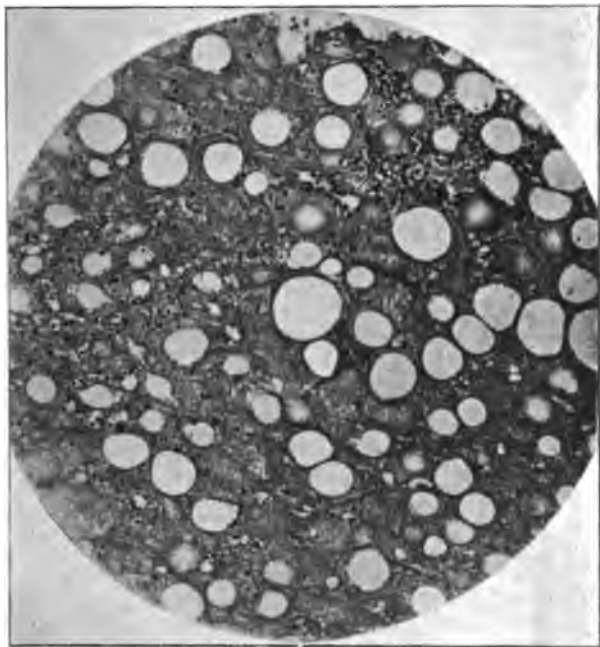


FIG. 2.

Section of femur-marrow from case of T. H., showing the gelatinous change and very slight lymphocytic infiltration.

extremity was composed of such tissue. Over this lymphoma the mucous membrane was thinned, and below it the submucous fibrous strands were hypertrophied. The thickening of the wall of the vermiform appendix was found to be due to a great increase of the lymphadenoid tissue in the submucous coat. The mucous membrane was much atrophied, and was only represented by a single layer of atrophic columnar epithelial cells and an occasional gland.

Films of the rib-marrow revealed 64 per cent of the white cells to be medium-sized lymphocytes, and 35 per cent myelocytes. The femur-marrow, which was deficient in fat, had undergone, in great part, a gelatinous change, and only here and there showed small accumulations of lymphocytes. In the femur-marrow 2.4 per cent of the red blood corpuscles were nucleated, and in the rib-marrow 3.6 per cent.

In almost all the organs, but most marked in the liver, were bacterial emboli composed of staphylococci. In the pus from boils were found micrococcus tetragenus and a Gram-staining coccus, which in places was intracellular and had the morphological characters of the gonococcus.

Remarks.—The enlargement of the spleen might be described as excessive for this form of leukæmia. It is stated by Felix Pincus¹ that the very large and hard spleens seem, as a rule, to belong to the cases manifesting a small lymphocytosis in the blood, and the present case does not violate this rule. That the spleen did not continue to grow till the end of life, but actually diminished very considerably in size, is probably to be correlated with the occurrence of the septic infections. The presence of lymphomata on the eyelids, as here obtained, would seem to be rare. The hyperplasia of the lymphadenomatous tissue of the vermiform appendix, though in no way to be marvelled at, is not, so far as I can find, mentioned.

It is interesting to note that with the onset of septic processes in the tonsils a leucocytosis occurred. Thus, on 16th August, the polymorphonuclear leucocytes numbered only 3,588 per c.mm. and on 6th September but 3,520, while on 15th September, when the tonsils had commenced to slough, they were estimated at 14,509 per c.mm. The terminal infection did not evoke a leucocytosis, for at its onset the polymorphous leucocytes numbered only 3,168 per c.mm.

Though in practically every case the bone-marrow is involved, still "isolated cases (especially that of Fleischer and Pentzoldt) are known in which no abnormality was found" (Pincus²). It is of great importance, then, to note that in this case the bone-marrow was only very slightly affected. Thus in the red marrow from the ribs the percentage of lymphocytes was but 64, while that of the myelocytes was 35. These figures differ very little from the normal as given by Jones³—

¹ *Nothnagel's Encyclopædia*, "Diseases of the Blood," 1905, p. 586.

² *Loc. cit.*, p. 598.

³ *British Medical Journal*, 1905, vol. i, p. 410.

lymphoid cells 50·2 per cent and myelocytes 39·3 per cent. The femur-marrow, as before remarked, contained very few and very small lymphocytic accumulations, and had in great part undergone gelatinous change.

This case presents a striking contrast to that previously reported by my brother and self, when the marrow from the shaft of the femur looked under the microscope like a section of a lymphatic gland from the same case, and when the non-granular cells in the rib-marrow constituted 95 per cent of the whole.

It may be that the gelatinous change found in the femur-marrow has replaced what at one time was a lymphoid marrow; on the other hand, this gelatinous change may have been present for some considerable time, and may have prevented the lymphocytic element of the marrow from proliferating. The former view is, on the whole, the more probable, since Muir and Stockman¹ are of opinion that emaciation—a feature noted in the present case—is the essential predisposing cause for this change. These same authors have always found in marrows of this nature a very slight leucoblastic reaction, and with this finding must be correlated the absence of leucocytosis with the terminal septic infection. The presence of a well-marked polymorphous leucocytosis, fifteen days previous to the onset of the terminal infection, suggests considerable vigour on the part of the leucoblastic tissues at that time, and slight if any involvement of the marrow in the gelatinous change found at death.

“As is well known, the manner in which the different organs are affected varies greatly in different cases” (R. Muir²). These two cases reported by me show considerable variation, and a comparison of them suggests a more or less haphazard involvement of the lymphadenoid tissue throughout the body.

Professor Muir referred to the enlargement of the spleen, especially in the second case, and to the difficulty of classifying the types of the disease according to the organ affected. He held that the changes in the spleen were secondary to those met with in the blood, and instead of having a definite relation to the condition of the blood, depended more on the duration of the disease. The gelatinous appearance met with in this case supported his view that this stage was met with before the lymphoid infiltration of the marrow began.

¹ R. Muir, *Trans. Path. Soc. London*, 1902, pp. 391-393.

² R. Muir, *Glasg. Med. Journ.*, 1905, vol. lxiiv, p. 166.

REVIEWS.

A Text-Book of Psychiatry for Physicians and Students.
By LEONARDO BIANCHI, M.D. Translated by JAMES MAC-
DONALD, M.B. London: Baillière, Tindall & Cox. 1906.

IF we remember aright this work was published by Professor Bianchi, of Naples, in three parts—the first dealing with the anatomy and physiology of the cerebral mantle and of the various paths and centres; the second being devoted to an analysis of the symptoms of disordered mind in relation to normal psychical processes; and the third to a study of the individual forms of mental disorder.

In this authorised translation the three parts form one large volume of 900 pages, and in this review we have not found it possible to attempt a detailed criticism and discussion of the views of Professor Bianchi and the Italian school of psychologists. We limit ourselves, therefore, to a brief statement of the leading features of the book, which the high position of the author among Continental alienists and his many contributions to neurology and psychology constitute as one of the highest class. And we would say that, so far as our knowledge goes, the translation has been well done. It is true that some of the terms and definitions in the text are not commonly found in the literature of the specialty in this country; but doubtless they have been thought by the translator to best express the meaning of his author.

An introduction of twenty-two pages deals with the evolution of the nervous system, and with the parallel development in complexity of nervous organisations and psychical processes. Then follows a well written account of the brain cortex in its anatomy and physiology, and a clear description of the motor and sensory paths. The physiology of the various brain areas is less satisfactory in description, and we fail to understand why a discussion on language—surely intellectual in origin—here finds a place. Next we have dealt with the facts of normal psychology as correlated to the symptoms of disordered mind, and this undoubtedly forms a good introduction to the third part of the book—that dealing with mental disorders. We find an account of delirium, which is defined as a qualitative disturbance of ideation, and as regards origin is divided

into primary and secondary. Its two great sources are recognised as altered associative and altered perceptive processes (hallucinations, illusions), and, as varieties, we find described expansive, depressive, and religious, the latter of which is much less frequent now than in the past. Its frequency then is thought to have been due to the concentration of the mind on dogma and to the impoverishment of the body through repeated fasts and other rigors of a religious life.

Thirty-five chapters constitute the third portion, and the first two are taken up with the examination of the patient, the determination of the mental state, and with the much-disputed question of the classification of the insanities. The author considers that an etiological classification would be neither scientific, rational, nor useful, and that one founded on a pathological basis—though that should be our ideal—could not at present be taken seriously. Considering that a classification cannot be founded on one characteristic alone, but on several, he divides mental affections into three great classes, and we think the division a good one—(1) Disorders characterised by an evolutionary psycho-cerebral defect (*e.g.*, idiocy, epileptic insanity); (2) a group including all the mental affections of infective, autotoxic, or toxic origin, developing in normally evolved brains (*e.g.*, mania, melancholia, alcoholic and morphinic insanities); (3) all the affections with an organic substratum, localised or diffuse, in the brain (*e.g.*, paralytic dementia, senile dementia, traumatic dementia).

It is not our purpose to follow the author's descriptions of the varieties of mental disorder, illustrated as they are by many clinical cases, but two prominent features stand out and must be referred to. The first is the importance given to the various forms of toxic action as causative of insanity, and the second is the grouping under the title of Sensory Insanity of all those psychopathic states which begin with hallucinations and illusions. We regard this as one of the best parts of the book, and the grouping includes amnesia, dementia præcox, stupor, and mental confusion, the presence of hallucinations being a constant fact at the commencement of each of those morbid conditions. The clinical pictures drawn by the author of the varieties of sensory insanity are illuminating and convincing, and the group of psychoses is looked on as due to endogenous intoxication and infection. There is a good chapter on general paralysis, and the researches of Ford Robertson and others of the Scottish microbic school are referred to with approval.

Mention should be made of the general excellence of the

illustrations, and of the provision at the end of the book of an index of authors in addition to one of subjects.

We have already expressed our high opinion of this work and of its translation, and while it is one more likely to be consulted by the specialist than by the general physician, it will well repay careful study by reason of its wealth of clinical material, and as being the work of an accurate and original observer.

Studies in Clinical Psychology. By LEWIS C. BRUCE, M.D.
London: Macmillan & Co. 1906.

TEXT-BOOKS on mental diseases are already numerous, but in the one under review a striking feature is the attempt made to bring the study of mental diseases into line with the more recent methods employed in the clinical observations of general physical diseases. The author has given much time to the clinical and pathological study of the symptoms of the insanities, and his results have been elsewhere recorded. We take it that the work now before us embodies his results more fully than his published papers, and we accept it as one of considerable value.

The book is divided into two parts, the first dealing with the physical symptoms of mental disease, and with the causation and classification of the insanities. The author advances the toxic theory of their causation, and it may at once be said that in no book on the subject by a British author has this theory been so ably and so fully set forth. It is a theory steadily gaining ground, and while it cannot be directly proved, it is, by the accumulation of clinical facts, becoming steadily more probable. If we do not follow all the details of the classification adopted, it is because we believe a satisfactory classification is impossible in the present position of knowledge, and we prefer to abide by the simpler forms at present in use and generally accepted.

Toxic and non-toxic causation being the classification adopted, we find one hundred pages devoted to the consideration of the varieties due to the former, and fifteen pages to those due to the latter. Non-toxic forms include exhaustive insanity, that resulting from mental and physical shock, from brain anæmia, from deprivation of the senses, and from gross brain lesion or injury. They are briefly but fairly dealt with, the detailed clinical analysis of the illustrative cases here as elsewhere in the book evidencing much careful and original observation.

The insanities of toxic origin are divided into three classes, those the result of toxins of metabolic origin, those where there is evidence of bacterial toxins being present in the blood, and those the result of alcoholic and drug toxins. Each of these groups is again subdivided, and the varieties discussed in detail. We cannot agree with the author that there are sufficient proofs to justify delusional insanity—paranoia—being considered as the result of toxins of metabolic origin, but in discussing those forms due to a bacterial toxæmia, and in which an invariable symptom is the presence of a hyper-leucocytosis, we agree that to this group properly belongs excited melancholia, and not to that due to defective metabolism. Delirium tremens and chronic alcoholic insanity are afterwards described, but dipsomania is regarded as a nervous disease complicated by mental disease, and with this many will agree. Some space is devoted to a consideration of morphinism and cocaineism, and in speaking of the treatment, it is advised to withdraw the drug gradually. In our experience we have found it best to have it suddenly withdrawn, and that is also what has been preferred by most of those who have been under our observation for either of the habits.

Chapters are given to descriptions of epilepsy and general paralysis, and, with regard to the latter, the author very fairly states the case as for and against a toxæmia by bacterial origin as the cause. General paralysis is not regarded as a variety of insanity, but as a nervous disease with mental symptoms, and considering the work done by Dr. Bruce on this subject, his opinions must carry great weight.

The observations in the section on the clinical pathology of mental diseases are of great value and most suggestive. Here we have some of the strongest arguments in favour of the theory that the physical symptoms in insanity are primary, and not secondary to, or caused by, a diseased condition of the brain. The general treatment of mental diseases is given a chapter, and importance is placed on the value of mental and physical rest. We think the detailed description of artificial forced feeding unnecessary in a book of this sort, and possibly some may still believe it sense, and not nonsense, to talk of treating mental as distinguished from physical symptoms. Thyroid extract in the treatment of insanity was first used by the author in 1892, and naturally its use in the various forms is fully discussed. It is evidently believed that it acts as a brain stimulant, but only a guarded opinion is given. Physicians who have given an extended trial to this treatment have had very different results, and we believe the mode of

action is still unknown, and that the thyroid benefits simply by producing a febrile state.

A number of interesting charts are given at the end of the volume showing the leucocytal condition of the blood in melancholia, mania, and other forms of insanity.

The book is a record of careful and original clinical work, and a valuable contribution to the study of the insanities.

The Frog: An Introduction to Anatomy, Histology, and Embryology. By the late PROFESSOR MILNES MARSHALL. Ninth Edition, edited by F. W. GAMBLE. London: David Nutt. 1906.

THE fact that it has now reached a ninth edition testifies to the continued demand for this useful little classic. That it holds its place in spite of the many changes which zoological method has witnessed since its first appearance is surely due to the fine sense possessed by the late Professor Marshall of the needs and difficulties of a student entering on the large field of animal morphology. Dr. Gamble has advisedly altered little of the original matter, though extending the chapter on embryology somewhat, and adding several useful figures.

Food and Digestion in Health and Disease during Infant, Child, and Adult Life; with an Introduction on the Nature of Matter and the Phenomena of Life, and an Account of the Source, Properties, and Influence of Water. By M. A. DUTCH, M.D. London: Henry Kimpton. 1906.

It would not be easy to say much that would be both new and true on the subject of dietetics, a field wherein such physiological writers as Paris, Fothergill, Roberts, Thompson, Haig, Hutcheson, and many other observers have gleaned so diligently. However, as the lengthy title of his book shows, Dr. Dutch has taken a line of arrangement for himself, and he has wrought it out satisfactorily. He has avoided prolixity, although on such a well-worn theme as food and digestion it is difficult to exclude always the ordinary and the obvious. To a great extent keeping clear of technical physiology, our author discourses on the phenomena of life, digestion, nutrition, various foods and drinks—including special

chapter on water—and the change of aliment required at different periods of the individual life, and in the treatment of diseases. The examination of unwholesome food, and its effects on the human system, are properly referred to. Various diet tables, and the digestibility table of our never-failing American friend, Dr. Beaumont, together with a number of cookery recipes, are supplied.

A glossary and index complete the book, which, owing to its terseness and compactness of form, is well adapted for the medical student of public health and the inquiring layman.

Applied Bacteriology: An Elementary Handbook for the use of Students of Hygiene, Medical Officers of Health, and Analysts. By CRESACRE G. MOOR, M.A., F.I.C., and R. T. HEWETT, M.D., F.R.C.P., D.P.H. Third Edition ("University Series"). London: Baillière, Tindall, & Cox. 1906.

THIS work, as its title-page suggests, is an elementary text-book, and represents what was originally designated Moor and Pearmain's *Applied Bacteriology*. The work has always enjoyed a fair measure of popularity with workers in bacteriology, and we find much in it that is commendable. The descriptions of the various pathogenic organisms are succinct and accurate, but we think that recourse to illustration might have been made more freely throughout the text. The chapters on the bacteriological examination of water and milk are particularly full for this type of manual, and give a clear and intelligible account of the recognised methods to be followed in these highly important and advanced investigations. There is also a chapter on disinfection and disinfectants worthy of careful perusal. We regret, however, that in such a recent work on applied bacteriology, the important question of opsonic estimation as devised by Wright, and on which all bacteriologists are keenly working, was not deemed worthy of a chapter, or at least that some direction was not given as to the technique to be followed in it.

The book is clearly printed, and belongs to the handy, valuable, and popular series of text-books—the "University Series"—of Messrs. Baillière, Tindall, & Cox. There are appended eight coloured plates, which bear a striking resemblance to the illustrations in Lehman and Neumann's *Atlas of Bacteriology*, although we cannot find any acknowledgment of their source.

A Handbook for Midwives and Nurses. By COMYNS BERKELEY, B.A., M.B. With 58 Illustrations. London: Cassell & Co., Limited. 1906.

THIS is a convenient and excellently arranged little book of 283 pages. In addition to the usual sections on anatomy, pregnancy, labour, and the puerperium, there are others on the physiology and pathology, and the management and feeding of infants, on house sanitation, and on sepsis and anti-sepsis in midwifery.

By means of the tabular arrangement of symptoms, and by the free use of full-face type and of italics, the study of the subject is considerably facilitated. The only adverse criticism that might be passed is, that the author is rather inclined to look upon the midwife as if she were a fully qualified medical practitioner. For instance, in the chapter on ante-partum hæmorrhage, under treatment of accidental hæmorrhage, we read:—"Perhaps the best way to do is to tighten it (the abdominal binder) from behind if the patient is able to stand up. . . . In addition, if the patient is in immediate danger, and the doctor has not yet arrived, the membranes should be ruptured, and a full dose of ergot should be given."

On page 97, in the description of the movement of flexion of the head while entering the brim, the author states that the occipito-frontal is substituted for the suboccipito-bregmatic. This is obviously the reverse of what he intends to say.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

M E D I C I N E.

By WALTER K. HUNTER, M.D., D.Sc.

Paratuberculous Inflammations. By Antonin Poncet and René Leriche (*Bull. d'Acad. de Méd.*, Nos. 11 and 15, 1906; *Lyon Méd.*, No. 30, 1906).—This term has been applied to certain chronic inflammations which, though not having the specific characters of a tuberculous inflammation, yet are so frequently found associated in the same subject with other lesions, certainly tuberculous, as to suggest some sort of relationship between the two. The inflammation, it is held, is probably due to the toxin of the tubercle bacillus, which, being manufactured in the tuberculous lesion, is carried by the blood to the other tissue, where a chronic inflammation is set up. The

same chronic inflammation may be produced in animals by injecting small but repeated doses of tuberculin; and it is, therefore, by the slight but continuously irritative action of this toxin that the chronic inflammation is produced. This inflammation need have none of the specific characters of the tuberculous lesion—no giant cells, and no caseation. It has also been shown that it is possible to obtain a strain of tubercle bacilli which, when injected into animals, produce a non-specific, simple inflammatory lesion, ending in resolution or cicatrization. So that while this so-called paratuberculous lesion is probably toxic in origin, it may possibly be due to an attenuated tubercle bacillus. Somewhat similar observations have been made clinically, for there are cases with inflammatory lesions in no way characteristic of tubercle, and yet which tuberculin pronounced tubercular.

The authors hold that the various forms of rheumatoid arthritis are most often tuberculous in origin. They quote figures to show the frequency with which a tuberculous lesion is found in the lungs of such cases, and they maintain that the deformed joints present good examples of this chronic paratuberculous inflammation. In acute rheumatoid arthritis the joints are most often sterile. They present two degrees of the inflammatory process. In the lesser the synovial membranes are chiefly affected, along with some oedema of the periarticular structures and a slight amount of fluid in the joint. Recovery in this case may be complete, the function of the joint being entirely restored. In the other the inflammatory process is chiefly periarticular and osseous, the cartilages also being eroded and ulcerated. There is little fluid thrown out, the process being plastic, and having a tendency to ankylosis.

In the chronic cases of rheumatoid arthritis the same sort of inflammatory process is going on, but the various tissues of which the joint is made up show such varying degrees of change in the different cases that we have considerable variety in the deformity produced. In this way several clinical types have been produced, but the essential nature of the disease remains the same. In some cases an atrophic process seems to be at work, and in some of these there is no obvious deformity of the joints, a thinning of the cartilage and osteoporosis of the ends of the bones being the only notable change *post-mortem*. In other cases, in addition to the spongy condition of the ends of the bones, osteophytic outgrowths may be present as well as changes in the synovial membrane and other soft structures of the joint. The articular surfaces lose their cartilages, and the rarefied ends of the bones are covered by a thin layer of compact, polished bone, showing grooves corresponding to the prominences in the ends of the adjacent bone. In these latter cases a considerable amount of deformity is present, but the atrophic process in the heads of the bones is the outstanding feature of the pathological process. In some other cases, again, *e.g.*, morbus coxæ, there seems (to begin with, at least) a rarefying osteitis, usually central, and allowing of softening and cupping, but soon followed by considerable hyperostosis at the margin of the articular surface. In the later stages of the disease there is no appearance of osteoporosis, for the head of the bone is seen to be as dense as normal bone.

Finally, we have cases of rheumatoid arthritis which end in ankylosis. At first the arthritis is simple. There is infiltration of the synovial membrane, swelling of the bone at the insertion of the tendons and ligaments, and the cartilages adhere to each other. According as the cartilages are more or less affected, we have a synostosis or an ossification of the sclerosed capsule and ligaments of the joint. In the latter, which is the more common, the ossification begins at the periphery and extends to the whole of the capsule. In the other case we have a direct union of the ends of the bones without involvement of capsule. There are no osteophytes, and there is no deformity. Examples of this are seen in the vertebral column and in the hip-joint. Histologically, there is a disappearance of the cartilages, allowing the ends of the bones to come in contact, and from these there are outgrowths of bone which, penetrating the adjacent surfaces, unite the two, leaving ultimately no appearance of the line of contact. When the ossification begins at the periphery it is the synovial membrane which proliferating penetrates and destroys the cartilages.

But the authors do not limit the action of the tubercle toxin to articular structures, for they claim that the atheroma, which is sometimes found in cases of phthisis pulmonalis, may as readily depend on this toxin as on the toxin of syphilis when syphilis is present. Further, they urge that the adenomas found in the breast in various tuberculous diseases have likewise the tubercle toxin for their exciting agent. A chronic irritation can produce a proliferation of epithelial tissue with the appearance of adenoma, and why should not the tubercle toxin be the irritant? It is relatively common to have the co-existence of benign tumours and tuberculosis, and the association is so frequent that it is difficult not to think of tuberculosis as having something to do with the etiology of these tumours. In most cases it is a mild form of tuberculosis, very slow in its development, and often not recognised; and the adenoma develops insidiously, like the chronic arthritis already referred to.

SURGERY.

By ARCH. YOUNG, M.B., C.M., B.Sc.

The Results of Operative Treatment of Varicose Veins of the Leg by the Methods of Trendelenburg and Schede. By R. T. Miller, jr., M.D., Baltimore (*Bull. of the Johns Hopkins Hospital*, September, 1906).—The following are the conclusions arrived at from consideration of the 128 cases of varicose veins of the legs treated at the surgical clinic of the Johns Hopkins Hospital up to 1st July, 1905, particularly with reference to the results of treatment by the two methods respectively of Trendelenburg and Schede, i.e., ligation and division of the internal saphenous vein in the thigh, and partial or complete circumcision in the upper third of the leg, with division between ligatures of all the superficial veins encountered. Mudlung's operation (more or less complete excision of the varicose internal saphenous vein) was performed in 5 cases, but as these were amongst the earliest of the series they have not been able to be traced. Many of the other cases have been followed for ten years and more, and a reliable estimate, it is thought, can, therefore, be made of the comparative value of the other two methods named. Conclusions:—

"1. Varicose veins of the leg are not an incident of senility; the condition is rather a disease of young and middle-aged individuals, over one-third of the cases appearing before the thirtieth year, and two-thirds before the fortieth year.

"2. From an etiological standpoint, there are two classes, viz., inflammatory and non-inflammatory. The inflammatory group includes about one-third of all cases; phlebitis occurring as a complication or sequel of pregnancy, post-operative convalescence, or an acute infection, among which typhoid fever is the most frequent. The pathology of the non-inflammatory group is obscure.

"3. In 128 cases, the right and left legs were affected in about equal proportion; over one-half of the cases were bilateral.

"4. Trendelenburg's operation cured 78 per cent in a series of 41 cases; this is about the result generally reported. In the first four post-operative years 89 per cent were cured; in the fifth to eight post-operative years but 63 per cent were cured. The tendency to recurrence of symptoms increases as the post-operative interval lengthens.

"5. Schede's operation cured 33 per cent in a series of 9 cases. Of 2 cases, two years or less since operation, both were cured; of 7 cases, more than two years since operation, but one was cured. The tendency to recurrence of symptoms as the post-operative interval lengthens is much greater after a Schede than after a Trendelenburg operation.

"6. Division between ligatures of the saphenous vein does not ensure

permanent occlusion. The venous stream may be re-established in three ways, viz., dilatation of anastomoses around the point of division (two cases), formation of varices in the scar (three cases), or end-to-end anastomosis of the ligated stumps (three cases). The Schede operation is followed particularly by anastomosis of ligated stumps; of six cases examined, three showed an intact saphenous vein running directly through the scar.

"7. Functional restoration of the saphenous vein may be, but is not always, accompanied by recurrence of symptoms.

"8. Resection of 8 cm. or more of the saphenous vein at the saphenous opening, made through a generous transverse-skin incision, is to be preferred to simple division of the vein.

"9. Post-operative pulmonary embolism is rare, but has occurred between the fourth and thirteenth days. The onset is marked by sudden dyspnoea, cyanosis, tachycardia, and signs of collapse, accompanied by rise in temperature; the symptoms may subside rapidly, may persist with the physical signs of pulmonary infarct, or may be followed immediately by sudden death."

The Diagnosis of Pleural Effusion and of Empyema in Children. By G. S. Middleton, M.A., M.D. (*The Practitioner*, November, 1906).—Apart from the commonly mentioned signs of (1) temperature oscillation, (2) rigors and sweating, (3) bronchophony, as contrasted with whispered pectoriloquy, as serving to aid in making a diagnosis between serous and purulent pleural effusions at as early a period as possible in the history of any case, Dr. Middleton draws attention to certain special indications which, in the presence of pneumonia, would warrant the suspicion of empyema and the making of an exploratory puncture. These are—

1. The presence of undue delirium, which is not usually present in simple pneumonia. Wild delirium in the early days of the disease strongly points to the presence of empyema.

2. Marked oscillations in temperature. In pure pneumonia the oscillations, up to the crisis, rarely go beyond a degree or a degree and a half.

3. Marked tenderness. This is not usually present in pneumonia.

4. Fulness in one or more intercostal spaces. This is more likely to occur in empyema after more than a week's duration, but may occur early.

5. Prolongation of the fever, with or without acute symptoms, beyond the ordinary period of crisis of pneumonia. In such cases the temperature falls a degree or two about the fifth or sixth day, as a rule, and goes on oscillating indefinitely, the illness becoming apparently less acute, but liable to so-called "relapses."

Exploratory puncture, in Dr. Middleton's view, is the only sure means of diagnosis in doubtful cases, and in his own (now large) experience he has had no ill-result from its use. While not regarding the procedure as "harmless, and on a par with the use of the stethoscope for the examination of children's lungs," he believes in its use, in cases where there is any doubt, as being fully justified, and, on the whole, as safe as any of the various procedures long accepted by the profession. Against the eleven deaths collected in the editorial article of *The British Journal of Children's Diseases* (October, 1905), where the fatality was definitely traceable to the use of the needle, he puts the fact that "a considerable number of children are buried, as cases of pneumonia, whose lives might have been saved, had the needle been used in time."

Appendicitis in the Infant. By Kirmisson and Guimbellot (*Revue de Chirurgie*, 10th October, 1906).—The authors record a case of fatal appendicitis in an infant of 11 months, and proceed to give, in summary, notes of all the cases of this disease occurring in infants which they have been able to find recorded in surgical literature. They have been able to collect 26 undoubted instances. Of these, 9 occurred in the first year of life, and 17 in the second year. The mortality was 19 out of the 26, or a percentage mortality of 73.07.

All the 9 cases occurring within the first year of life ended fatally ; of the 17 occurring during the second year of life 7 recovered and 10 died. All those that recovered were over 18 months old. Surgical intervention was practised in 19 cases (7 in the first year and 12 in the second year), with 7 cures and 12 deaths (7 in the first year and 5 in the second). The conclusions drawn are—

1. Appendicitis in the first two years of life is not so rare as has been thought.
2. Its progress is rapid, and the prognosis extremely grave.
3. The only cases of cure, so far recorded, were operated on at once in the acute stage; immediate operative interference seems, therefore, clearly indicated.
4. An important obstacle to operative intervention exists in the difficulty of diagnosis. All the more necessary, therefore, is it that all available facts bearing on such cases should be recorded.

NERVOUS DISEASES AND INSANITY.

By L. R. OSWALD, M.B.

The Application of Cajal's Method of Silver Impregnation and the Pathological Anatomy of the Axis Cylinder. By André Thomas (*Rev. Neur.*, 31st March, 1906).—By means of this stain it is possible to distinguish axis cylinders from neuroglia fibres, and the method has been used with advantage in the study of cases of hemiplegia and of multiple sclerosis, as also in conditions affecting the peripheral nerves. It, furthermore, demonstrates the presence of the spirochæta pallida of Schaudinn in organs affected with syphilis. It is, however, somewhat uncertain and variable in its action, but these disadvantages can, with certain precautions, be to a large extent overcome.—M. B. H.

A Tumour of the First and Second Left Frontal Gyri: Motor Agraphia: Removal and Recovery (from the abstract in the *Rev. Neur.*, 31st March, 1906, of a paper by J. W. MacConnell in the *Univ. of Penna. Medical Bulletin*, July and August, 1905).—The patient, a right-handed man, aged 28, had a good family history; there was, however, an injury to the head in infancy. Between February, 1899, and December, 1900, he had four fits, apparently general, and between June, 1901, and April, 1904, numerous similar attacks occurred in series. In May, 1904, there was for the first time a fit without unconsciousness, and the convulsions were limited to the right side of the face. Thereafter they were restricted to this locality, and occurred several times a day. The patient knew when an attack was coming on, and during it (a minute and a quarter) he would do as he was told, but for five or six minutes after there was slight thickness of speech and slight mental confusion. The lower part of the face was first affected (exhibiting masticatory movements), then the upper part, and, lastly, the muscles rotating the head to the right.

He was admitted to hospital on 18th May, 1905, having had on that day twelve fits, and his condition then was as follows:—No paralysis, paresis, or ataxia of right limbs; reflexes normal; right facial paresis, most marked after the fits; diminished sensibility of right half of face; speech thick only after numerous fits, all words and letters being similarly affected; no difficulty in reading written or printed words or figures, or in recognising and naming objects; writing illegible; result similar when writing to dictation; writing copied perfectly. A paper written two years previously showed omissions and mistakes in spelling, and in the formation of certain letters. In a later specimen these faults were exaggerated.

On 21st May, 1904 (*sic*), a superficial tumour was removed from the base of the second left frontal convolution. It encroached upon the lower half of the first and slightly on the third, and on the ascending frontal gyri.

In the month of June following the patient was looked upon as cured.—M. B. H.

Absence of the Spirochæta Pallida from the Central Nervous System of General Paralytics and Tabetics. By G. Marinesco and J. Minea; communicated by Pierre Marie to the Neur. Soc. of Paris (*Rev. Neur.*, 30th April, 1906).—Both Giemsa and Romanowsky's stains have failed to demonstrate the presence of the spirochæta pallida in more than fifteen cases of general paralysis and tabes, although some of the latter were incipient. Cajal's method of impregnation was also employed, with a similar negative result. The trunks, posterior roots, and spinal ganglia were searched in five cases of tabes, and the cerebral cortex in seven general paralytics. The authors do not think this result was due to faulty impregnation nor to scarcity of the spirochæta. The examination was so thorough as to lead them to believe the organism absent, and since the diseases are progressive, they consider it unlikely that the organism, once present, can have disappeared. They do not, however, deny a relationship between syphilis, general paralysis, and tabes, in view of the existing clinical and statistical evidence in support of it. But the research shows that these diseases are not due to the direct and immediate action of the spirochæta pallida. They may be due to toxins produced by it, and the fact that the lesions differ from those of syphilis supports this hypothesis.—M. B. H.

The Phenomenon of the Already Seen (Déjà Vu). By Dr. Pierre Janet (*Journal de Psychologie*, August, 1905).—In this paper we have a new handling of the psychological problem involved in that singular illusion—"the already seen." The author pleads for more clinical observation and less theoretic psychology in the study of this and other obscure phenomena. He quotes and criticises Wigan's formula of 1844, which he considers too precise, implying as it does the existence of two series of phenomena, the one actually at hand and furnished by present perceptions, and the other representative in character and supplied by memory. Reviewing the earlier theories that have been advanced, he considers their fatal defect to be that they introduce imaginary and unsubstantiated phenomena, and finds that the newer theories have the advantage that they consider that the disturbance lies in the perception itself, that there is, in short, no second image, but a disease of perception which is so modified as to give the patients the impression and feeling which are commonly to be found accompanying the perception of objects already seen and recognised.

He considers that in some cases the phenomenon is really an illusion, and that in others it results from pure suggestion. In two clinical conditions it is, however, undoubtedly found—epilepsy and psychosthenia—and of its appearance in these two conditions the author gives a clinical description.—L. R. O.

Alcohol and Insanity. By F. W. Mott, M.D. (*Journal of Mental Science*, October, 1906).—In this paper, read before the Medico-Psychological Association, Dr. Mott discusses the effects of alcohol on body and mind, as shown by asylum and hospital experience in the wards and *post-mortem* rooms.

He speaks of the prevalence of polyneuritic psychosis in London hospitals, remarking that the form met with there, in men as well as in women, is identical with that met with in asylums. While it is the mental symptoms that obtrude themselves in asylum cases, it is the physical in hospitals, though in the latter mental symptoms are rarely completely absent if the patient is carefully examined. He considers the mental symptoms specially apt to show themselves in women at the climacteric period, and to be frequently associated

with some other morbid factor, *e.g.*, parametritis, syphilis, pneumonia, or tuberculosis. He fails to find a satisfactory answer to the question he puts—Why do the great majority of intellectual, sensible, and moral people, men and women of as high civic worth as total abstainers, drink alcoholic beverages? remarking, however, that while not in any sense justifying its use on these grounds, in his opinion its moderate use may act beneficially by tending to remove that prudence and selfishness which restrain the natural and spontaneous feelings of sympathy and sociability which spring from the affective side of man's nature. He agrees with the view of Parkes, that as now used by mankind it is infinitely more powerful for evil than good, and he gives his own experiences and observations at Charing Cross Hospital in support.

In the *post-mortem* rooms of asylums he has been struck by the infrequency with which alcoholic liver is seen, only remembering one case of hob-nailed liver with ascites, that of the notorious Jane Cakebread. In 1,099 *post-mortems* at Charing Cross Hospital he found 85 with definite liver affection and 37 with ascites, while in 1,271 cases at Claybury Asylum there was a definite liver affection in only 23, and in no case was there ascites.

He came to the conclusion that only people with an inherently stable nervous system could drink long enough to acquire advanced alcoholic disease of the liver. The clinical differences of alcoholics in asylum and hospital practice are compared, and the whole paper, coming from one of Dr. Mott's experience, is suggestive and valuable.—L. R. O.

DISEASES OF THE EYE.

By FREELAND FERGUS, M.D.

Case of Chorioidal and Retinal Separation in Functional Albuminuria. By Richard Simon, of Berlin (*Klin. Monatsbl. f. Augenheilkunde*, February, 1905); and **The Examination of the Field of Vision in the Dark-adapted Eye, with Special Attention to Separated Retina.** By K. Stargardt, of Kiel (*Klin. Monatsbl. f. Augenheilkunde*, October, 1906).—These two papers are of interest, both from the clinical and the physiological standpoint. They are connected by the fact that both authors have examined the field of vision with the eye adapted for the dark under the guidance of Dr. Piper, assistant to Professor Nagel (Professor of the Physiology of the Sense Organs in the University of Berlin). Aubert, the first to examine the dark-adapted eye, laid down the rule that the sensitiveness of the retina increases at first extremely rapidly in the dark, then very slowly. Clinicians following him, believed that the maximum sensitiveness was practically reached in ten minutes. Piper carried out on this subject a long research, which the reviewer had the opportunity of observing (published *Zeitschrift für Psychologie und Physiologie des Sinnesorgane*, Bd. 31, 1903), and found that during the first ten to fifteen minutes the adaptation rises very slightly, and thereafter considerably, so that for most people the maximum is reached after thirty minutes. Taking advantage of this rule, both authors have devised a new method of examination of the field of vision in separation of the retina. The first paper is more of a groping in the dark (in a double sense), while the second describes a new instrument and rules for the exact examination of this function.

Simon's case was a young woman of eighteen years of age, who complained in 1895 of diminution of vision of six months' duration. She was myopic, but after correction had visual acuity in right $\frac{7}{16}$; left, $\frac{8}{16}$. There was a slight separation of the retina over the whole inferior half of the right fundus. The retina did not exhibit wave motion, but was completely rigid. In the interior temporal region it was thrown into folds. There were one or two white streaks with

pigment in the centre, and several white spots. The vitreous was clear, and tension normal. Examination of the urine revealed a functional albuminuria. Morning and evening urine was clear, while the mid-day sample contained a small quantity of albumen. The diagnosis was simple retinal detachment of unknown etiology, since the myopia appeared to be too slight to account for the symptoms. Treatment was unsuccessful, and after three years' observation the condition of the retina was the same. In 1904, nine years after the first examination, the patient reappeared with visual acuity in right, equal to fingers counted 5 to 6 metres. No albuminuria. The retinal separation involved three-fourths of the fundus, and included the macula, leaving only the superior nasal quadrant attached. The ophthalmoscope gave a difference of 3 D for the greater part of the separation, and 12 D for the folds in the lower temporal quadrant. The vitreous was clear, and the chorioid shone through the detached retina.

The examination of the right field of vision in 1895 revealed a defect in the superior nasal quadrant corresponding to the lower temporal quadrant. In 1904 the defect in the visual field instead of being much larger was, if anything, smaller and confined to the same situation. Examination in 1895 with colours had shown acquired violet blindness; in 1904 the colour perception was normal.

These contradictory results lead to the examination of the light sense. According to the views of Von Kries and others, the perception of colours is a function of the cones, while the rods are sensitive to light and darkness. The latter alone contain the visual purple, and it is by the regeneration of this substance from the hexagonal pigment layer that they are adapted for vision in dim lights. If the rods are separated from the pigment cells, as occurs in retinal separation where the latter remain attached to the chorioid, then absence of the dark-adaptation and of Purkinje's phenomenon is to be expected. The examination for these was carried out in this case with the assistance of Dr. Piper, and both were present, as in the normal eye. During the examination for Purkinje's phenomenon the patient was directed to look at the lower edge of the colours, so that the inferior half of the retina could be tested. The fovea reacted normally when the colour fields were suitably reduced in size. This unexpected result caused Professor Nagel to ask if the chorioid was not separated along with the retina. A more careful ophthalmoscopic examination showed that this was the case, and that probably only on the lower temporal region the retina itself was detached from the chorioid. An explanation was therefore possible for the various tests, and for the fact that an ordinary field of vision investigation had only revealed a defect in the superior nasal region, notwithstanding the continuance of the separation for ten years in the whole lower half of the retina.

As to etiology, the author's assumption that in the absence of other motives it must be laid in the functional albuminuria, seems so far justifiable; or rather, as he suggests, both come from a common cause, and that the albuminous exudation usually found between the retina and the chorioid has become sub-chorioid.

Stargardt has examined the field of vision in separation of the retina with the eyes dark-adapted and with lights below the threshold of the light-adapted eye, i.e., with lights only visible to the dark-adapted eye in the normal bounds. For fixation he uses a small lamp of 7.5 volts placed at the foot of a small light-tight cylinder. It is covered by various-sized diaphragms and a ruby opalescent glass, kept in position by a cover with springs at the side. The usual diaphragm was 2 to 3 mm. in diameter, but 2 cm. was employed where the vision was much deteriorated, the lamp being kept at a glow not necessarily below the threshold for the light-adapted eye. The test object was an exactly similar lamp, maintained, on the contrary, below the threshold, and arranged so that it was only visible to a normal eye ten minutes after being in the dark (control, five normal persons). The diaphragm was a square of 2 cm. side-length. The perimeter arc had small projections at the 10°. An absolutely dark room is necessary, and the patients are left in it for thirty

minutes with both eyes bandaged. A third lamp is used for orientation. It has a diaphragm of 4 cm. square, and protected by a double ruby glass, and consequently does not affect the adaptation.

Stargardt gives the result of the examination of four cases in which the ordinary perimeter in daylight, for white and colours, had failed to reveal the separation, while his method was successful. The results are very striking, and illustrate the value of the procedure in varied cases—two traumatic, one myopic, and one of unknown etiology. His conclusions are :—

1. At places where the retina is detached, the dark-adaptation is completely absent, whether the separation is shallow or prominent.

2. A diminution of the dark-adaptation is never observed ; either it is normal, or completely absent.

3. The detached retina may react normally in light-adaptation, so that the visual field may be normal, or approximately normal, for white or colours, although the separation might be total. It is only the visual acuteness which is then diminished, and that on account of the curvature of the retinal folds.

4. If the detached retina becomes again adherent to the chorioid, the dark-adaptation returns again to the normal for that part.

The explanation is similar to that for Simon's case, viz., if a detached retina is active for white light and colours, but is negative to the dark-adaptation test, then it must be due to the separation of the retina from the hexagonal pigment layer. Of course, if the retina returns as above mentioned, or if the detached retina is adherent to a separated chorioid, then the size reacts normally after dark-adaptation. The cones do not contain visual purple, and are therefore not injured by the separation until the retina degenerates. These cases may consequently be used in proof of the views advanced by Von Kries regarding the function of the rods and cones respectively. Of course, one always remembers the saying that as much can be learned from the ophthalmoscopic examination in detachment of the retina as from the field of vision testing. The old method, once so much in vogue, of testing for the *phosphenes*, is now rarely seen in the clinic, having given place to the more accurate devices of the present day. The testing of the dark-adapted eye is possibly of value in rare cases, such as the first here mentioned, but otherwise is too terrifying for nervous patients, and probably hardly accurate enough to come into general employment.—W. B. I. P.

PUBLIC HEALTH AND INFECTIOUS DISEASE.

By JOHN BROWNLEE, M.A., M.D.GLASG., D.P.H.CAMB.

Report on Plague Investigations in India (*Journal of Hygiene*, September, 1906).—In this report the results of the recent experimental investigations into the epidemiology of plague—conducted by a committee appointed by the Secretary of State for India, the Royal Society, and the Lister Institute—are recorded. The range of investigation has been very extensive, and has apparently completely verified the hypothesis that the flea is the chief agent in transmitting plague. This hypothesis, which seemed to be the only one capable of explaining the known facts relating to the spread of the disease, has met all along with a great amount of opposition, generally much more factious than scientific and logical, and it is now satisfactory to find it so completely verified. The report traverses practically the whole range of the subject. The variety of flea found upon the different kind of rats in different parts of the world, their adaptability to hosts other than the rat itself, the number of bacilli in the blood of rats and men in different stages of the septiciæmia, and the infectivity of the flea itself, are all fully considered. The direct experiments were carried out in four ways.

In the first group of experiments the transference of plague from rat to rat was investigated, and it was found that on thirty occasions a healthy rat, living in the neighbourhood of a plague-infected rat under circumstances which prevented the healthy rat coming in contact with the body or excreta of the plague-infected rat, contracted plague. In all cases a fairly abundant supply of fleas was present, which could pass freely from the one rat to the other, and formed the only apparent means of communication between the animals, apart from aerial contagion. That plague was transferred from the sick to the healthy rat by the agency of the fleas seemed thus most probable. To exclude aerial infection, attempts were made to conduct a similar series of experiments in the absence of fleas. This was, however, found to be impracticable, as not even with the greatest care could the animals be kept entirely free from fleas.

A second series of experiments were therefore instituted in which the fleas themselves were taken from a rat sick or dead from plague and placed on a healthy animal. It was found that in twenty-one experiments out of thirty-eight (55 per cent), healthy rats living in flea-proof cages, into which fleas collected from rats in other cages dead or dying of septicæmic plague had been introduced, contracted plague. The possibility of the rat flea (*P. cheopis*) carrying plague from one rat to another was therefore demonstrated directly.

In the third group of experiments a series of huts was constructed, to the roofs of which rats had different degrees of access, while guinea-pigs lived in the lower part of the hut. The two were prevented from coming into direct contact by one or two layers of wire netting, through which, however, both fleas and excreta could pass.

From observations made in an elaborate series of tests the experimenters came to the following conclusions:—

1. Close contact of plague-infected animals with healthy animals, if fleas were excluded, did not give rise to an epidemic among the latter. As the huts were never cleaned out, the healthy animals were in contact with the faeces and urine, and also ate food contaminated with the faeces and urine of infected animals, as well as with pus from open plague ulcers. In one experiment, close contact with infected animals was maintained for nearly a month, and in another where the infected animals were inoculated cutaneously, many developed ulcers containing plague organisms at the site of inoculation.

2. Young animals did not acquire the disease from close contact, even when suckled by plague-infected mothers.

3. If fleas were present, the epizootic once started, spread from animal to animal, the rate of progress being in proportion to the number of fleas present. Thus, in the experiments during the months of December, January, and February, the epizootic was very rapid in those huts in which the flea population was abundant, and was kept up by a natural supply from the roof; it was much slower in the hut in which the flea supply was kept up artificially; and, finally, it was slowest of all in the hut in which there was no definite natural supply of fleas and from which the fleas were daily removed for a period of six days, i.e., till only a comparatively small number remained.

4. An epizootic of plague might start without direct contact of healthy and infected animals. Thus, in one hut the healthy guinea pigs were not put in until the last inoculated guinea-pig had died and been removed.

5. Further experiments of a similar nature to those recorded in the second series, where fleas removed from infected animals were found to transmit the disease, were carried out with fleas removed from infected huts, and these were likewise found capable of transmitting infection.

6. Infection was found to take place without any contact with contaminated soil. Thus, in one of the huts guinea-pigs placed in wire cages 2 inches above the ground developed plague; also, a monkey placed in similar circumstances and never in contact with the ground, developed the disease.

7. Aerial infection was excluded. Thus, guinea-pigs suspended in a cage 2 feet above the ground did not contract the disease, while, in the same hut, both those animals allowed to run about and those placed in cages 2 inches above the floor became infected. Further, a monkey surrounded by a breadth

of "tangle-foot," greater than the length which may be jumped over by a flea, and exposed to as much aerial infection as the control animal which contracted the disease, escaped infection.

A fourth series of experiments was conducted as a control in the houses in Bombay in which one or more cases of plague occurred, and these led to the following practically identical, but also supplementary, results:—

1. Guinea-pigs allowed to run free in plague houses in many instances attracted a large number of fleas, of which the majority were those commonly found infecting rats. Twenty-nine per cent of these animals developed an attack of plague with fatal result. The position of the bubo in the great majority of these cases was in the cervical region, a fact in agreement with the usual disposition of fleas in the guinea-pigs, where the parasite apparently affects the softer skin of the neck.

2. When plague houses had been previously disinfected by the ordinary means of disinfection, it was found that the guinea-pigs placed in them still attracted large numbers of fleas. Further, 29 per cent of these animals also died of plague, the bubo in the great majority of these cases being again in the cervical region.

3. Fleas obtained from plague-infected rats found dead or dying in such houses were found capable of transmitting plague to healthy animals living in flea-proof cages in the laboratory.

4. Fleas obtained on guinea-pigs and other animals which had been placed for a few hours in plague houses, and transferred to fresh animals in flea-proof cages in the laboratory, were found capable of transmitting the disease. The situation of the bubo in these animals was, in the great majority of cases, in the cervical region.

5. When animals were placed in plague houses in pairs, both protected from soil and contact infection and both equally exposed to aerial infection, but one protected from fleas by means of a fine metallic curtain and the other not so protected, none of the protected animals sickened, though several of the unprotected animals died of the disease. The position of the bubo in every instance was in the cervical region.

6. When animals were placed in plague houses in pairs, both protected from soil and contact infection and both equally exposed to aerial infection, but one surrounded with a zone of "tangle-foot" and the other surrounded with a zone of sand, it was found that the animals surrounded with "tangle-foot" in no instance developed plague, while 24 per cent of the non-protected animals succumbed to the disease.

7. The fleas caught on the "tangle-foot" consisted of both those commonly parasitic on man and the rat. A certain proportion of these were found on dissection to contain in their stomachs abundant bacilli, microscopically identical with plague bacilli. Out of 85 human fleas thus obtained and dissected, only one contained these bacilli; while out of 77 rat fleas, 23 were found thus infected, an observation again suggesting strongly that the rat and not man is the most potent factor in the dissemination of plague.

These investigations form the chief part of the report. Among the subsidiary investigations, one refers to the species of flea obtained on rats, another discusses the effect which the passage of the bacillus pestis from rat to rat by means of subcutaneous inoculation, without intermediate culture, has upon the virulence. It was found that the organism, after twenty-six passages, still possessed essentially the same virulence as at the beginning. In another investigation the same result was obtained when the inoculation was cutaneous.

The last important part of the report concerns the number of organisms contained per cubic centimetre in the blood of rats and persons suffering from plague. It was found that the blood of plague-infected rats may contain as many as 100,000,000 organisms per cubic centimetre some time before death, and though the numbers are not nearly so high in the case of man, yet they are amply sufficient to allow of the conveyance of the organism by means of a suctorial insect.

Books, Pamphlets, &c., Received.

- Refraction of the Eye: Its Diagnosis and the Correction of its Errors**, with a Chapter on the Use of Prisms, by A. Stanford Morton, M.B., F.R.C.S.Eng. Seventh Edition. London: H. K. Lewis. 1906. (3s. 6d.)
- Physical Diagnosis**, including Diseases of the Thoracic and Abdominal Organs: A Manual for Students and Physicians, by Egbert le Fevre, M.D. Second Edition, Revised and Enlarged. With 102 Engravings and 16 Plates. London: Hodder & Stoughton. (10s. net.)
- Dental Materia Medica, Therapeutics, and Prescription Writing**, by Eli H. Long, M.D. With 7 Engravings and 18 Coloured Diagrams. Second Edition Revised and Enlarged. London: Hodder & Stoughton. 1906. (15s. net.)
- A Text-Book of Psychiatry for Physicians and Students**, by Leonardo Bianchi, M.D. Authorised Translation from the Italian, by J. H. Macdonald, M.B., Ch.B.Glasg. With 106 Illustrations. London: Baillière, Tindall & Cox. 1906. (21s. net.)
- Syphilology and Venereal Disease**, by C. F. Marshall, M.D., M.S., F.R.C.S. London: Baillière, Tindall & Cox. 1906. (10s. 6d. net.)
- Auscultation and Percussion**, together with the other Methods of Physical Examination of the Chest, by Samuel Gee, M.D. Fifth Edition. London: Smith, Elder & Co. 1906. (6s.)
- Manual of Surgery**, by Alexis Thomson, F.R.C.S.Ed., and Alexander Miles, F.R.C.S.Ed. Vol. I: General Surgery. Second Edition, Revised and Enlarged, with 313 Illustrations. Edinburgh: Young J. Pentland. 1906.
- Hypnotism, or Suggestion and Psychotherapy: A Study of the Psychological, Psycho-Physiological, and Therapeutic Aspects of Hypnotism**, by Dr. Med. August Fovel. Translated from the Fifth German Edition, by H. W. Armit, M.R.C.S., L.R.C.P. London: Rebman, Limited. 1906. (7s. 6d. net.)
- Prophylaxis and Treatment of Internal Diseases**, designed for the Use of Practitioners and of Advanced Students of Medicine, by F. Forchheimer, M.D. London: Sidney Appleton. 1906. (21s. net.)
- The Transactions of the Edinburgh Obstetrical Society**. Vol. XXXI. Session 1905-1906. Edinburgh: Oliver & Boyd. 1906.
- Polypus of the Nose**, by Eugene S. Yonge, M.D.Edin. Manchester: Sherratt & Hughes. 1906. (2s. 6d. net.)
- Lectures on Massage and Electricity in the Treatment of Disease**, by Thomas Stretch Dowse, M.D.Aberd., F.R.C.P.Edin. Sixth Edition, Revised. Bristol: John Wright & Co. 1906. (7s. 6d. net.)

**GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR
THE FOUR WEEKS ENDING 22ND DECEMBER, 1906.**

	WEEK ENDING			
	Dec. 1.	Dec. 8.	Dec. 15.	Dec. 22.
Mean temperature, . . .	47·8°	43·8°	34·2°	44·9°
Mean range of temperature between day and night, .	24·2°	21·4°	19·0°	20·4°
Number of days on which rain fell, ...	7	6	5	3
Amount of rainfall, . . ins.	1·53	1·51	1·36	0·09
Deaths registered, . . .	273	301	289	330
Death-rates, ...	17·0	18·8	18·0	20·6
Zymotic death-rates, . . .	1·2	1·4	1·5	1·5
Pulmonary death-rates, .	4·8	5·4	4·4	6·1
DEATHS—				
Under 1 year, ...	70	66	65	60
60 years and upwards, .	53	67	65	77
DEATHS FROM—				
Small-pox, ...	...	...	...	...
Measles, ...	1	...	...	...
Scarlet fever, ...	...	2	1	2
Diphtheria, ...	1	3	6	5
Whooping-cough, ...	14	12	13	14
{ Fever, ...	2	2	3	2
{ Cerebro-spinal fever, . .	4	5	4	5
Diarrhoea, ...	8	12	6	9
Croup and laryngitis, .	1	1	...	...
Bronchitis, pneumonia, and pleurisy, ...	62	57	58	64
CASES REPORTED—				
Small-pox, ...	...	...	...	...
Cerebro-spinal meningitis, .	6	5	7	9
Diphtheria and membranous croup, ...	37	36	35	32
Erysipelas, ...	32	27	26	36
Scarlet fever, ...	40	47	32	28
Typhus fever, ...	...	...	...	...
Enteric fever, ...	16	8	16	17
Continued fever, ...	...	...	...	...
Puerperal fever, ...	4	1	2	...
Measles,†	16	17	13	24

† Measles not notifiable.

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ORIGINAL ARTICLES.

ON THE NEED FOR A *PROGRESSIVE* STUDY OF
INDUSTRIAL DISEASES.¹

By JAMES W. ALLAN, M.B. C.M.,
Late Physician, Glasgow Royal Infirmary.

IN a former paper, entitled "Lectureships on Trade Diseases," delivered before the Medico-Chirurgical Society of Glasgow, and subsequently printed in the *Glasgow Medical Journal* and the *Transactions of the Medico-Chirurgical Society of Glasgow*,² I endeavoured to advocate the establishment of courses of instruction on Diseases of Occupation in connection with our medical schools.

The paper did not seem to attract much attention, and (so far as I am aware) has led to no action, but it brought me the following letter from the late Sir John Simon, K.C.B., of which I am, naturally, not a little proud:—

¹ Read before a meeting of the Glasgow Medico-Chirurgical Society held on 19th October, 1906.

² Vol. iii, p. 129.

KENSINGTON SQUARE, W.,
Saturday, 26th May, 1900.

MY DEAR SIR,—The blindness of old age obliges me to use another hand than my own for the purpose of thanking you for the pleasure I have just received in having read to me the pamphlet you are good enough to send me, and in observing there the kind mention you have been good enough to make of my endeavours in that field of work.

I cordially agree with you in thinking that medical education ought to include more instruction than it now commonly affords in the special diseases of industries, and though I dare not, with my present incapacity, attempt to follow your lines of argument, I may say that I think every first-class medical school ought, in some form or other, to provide such instruction as you advocate.—I am, Dear Sir, faithfully yours,

(Signed) JOHN SIMON.

DR. ALLAN.

The name of John Simon is one to conjure with. The father of sanitation in this country—long the Medical Officer of the Local Government Board of England, and Medical Adviser of the Privy Council—his authority is one which compels respect in all questions affecting the physical welfare of the people. My old teacher, Lord Lister, taught us to regard with reverence two names—that of Louis Pasteur, the French bacteriologist, and that of John Simon, the apostle of public health in Britain. The approval of such a man is to me a great encouragement to continue the effort to get classes organised for special instruction in industrial diseases, including the visitation of public works where dangerous trades are carried on.

I still hope to see "Lectureships on Trade Diseases" established at our universities and medical schools in the section devoted to Public Health and Hygiene. Such classes would be very useful, not only to intending certifying factory surgeons but to general practitioners, for the knowledge of a man's trade or occupation often throws a strong light on the nature of a patient's illness. I shall not further pursue this subject here. In the present paper I propose to deal with another aspect of the industrial diseases question, namely, the need for a *progressive* study of the disorders of health which attend the development of our industrial enterprises. For it is to be borne in mind that industrial diseases are not fixed entities, but that they are the results of causes which

are undergoing changes and modifications, or are coming into existence or disappearing; and, consequently, they also may be expected to change or modify, come into existence or disappear, as the case may be. And, still more important, we must remember that in this day of wonderful industrial activity, with its introduction of new methods—nay, more, of new industries—we must for ever be on the outlook for the results on the health of those employed in the work.

It may be said that the results of these new agencies, new methods, or new industries will soon manifest themselves, and can then be dealt with, and that there is no need for any special "study" in the matter. To this the reply is that evil effects of a subtle yet very injurious nature may be overlooked or attributed to a wrong source, and that workpeople seem often to have a singular indifference to the effects of a trade on their health. But let us go a step farther, and suggest that such evils should not only be dealt with when they arise, but, better still, that they should be *anticipated* and *prevented*.

I shall now give some examples in illustration of the foregoing arguments; and in the first place, I shall deal with "industrial anthrax." Anthrax is due to a specific organism, the *bacillus anthracis*, which gives rise to different forms of disease in the body. It may give rise to a sore on the surface, which is called "malignant pustule" or *charbon*; or it may get into the blood-stream and give rise to what Dr. Bell, of Bradford, has called "anthracæmia," a condition which exists in the industrial malady known under the name of "wool-sorters' disease." The first-mentioned form of disease, malignant pustule, occurs in tanners and butchers—in short, in persons whose occupation leads them to handle the hides of cattle which have been infected with anthrax. The second form, pulmonary anthracæmia, is found in those who work among infected wool.

Now, this subject of anthrax is one of great interest and importance, but I shall here only dwell on that form of it last mentioned, *i.e.*, woolsorters' disease. This disease has been long known, but the cause of it was not detected till Dr. Bell, of Bradford, proved that the microscopic organism known as the *bacillus anthracis* was the *fons et origo mali*. This was a great discovery, and it has made the name of Dr. Bell famous; his researches and labours have brought about improvements which have effected a great saving in life and health—in short, Dr. Bell, of Bradford, takes his place among the recognised benefactors of mankind.

Now, everything said by such a man on the subject of

anthrax is worthy of careful study and attention, and I wish you to listen to his own words (as reported in the *British Medical Journal* for 14th October, 1905) when he was opening the discussion on anthrax, in the section of Industrial Hygiene and Diseases of Occupation, held at Leicester. He says:—

“In the short time at my disposal I wish to notice, without going beyond Great Britain, the different types of the disease met with in different industries, and also in the same industries at different periods, giving some probable reasons why these vary so much; afterwards I will submit to you some recommendations bearing upon the prevention and treatment of the disease. Allow me to remind you that a distinct and definite disease may repeatedly attack persons in a community and escape detection. Anthrax has come to us from the far East, through all ages. It is probable that it stalked abroad in this country for generations before it was recognised as a separate disease. During recent years, by the labour of many in all civilised countries, it has become more and more known to us as affecting an increasing number of persons, particularly those employed in certain industries where foreign infective materials are used.

“It is generally agreed that dry and dusty hides from the East are more dangerous than other kinds. The maximum weight of these imported into this country in any one year was reached in 1872. Towards the end of that year a keen observer, Bryant, of Guy's, which is near to the centre of the London anthrax district, wrote—‘Malignant pustule is a disease with which I have no personal experience.’ Surely many cases of both internal and external anthrax must have occurred among the workers where these dry hides were used, and were passed without recognition. After another ten years, in 1882, when the disease had become better known, the number of fatal cases had increased, and the quantity of dry hides imported had diminished. This increase of cases indicates that many previously had been overlooked. If the external type of anthrax escaped detection for so many years, is it not probable that the internal form, of which very few had been noticed, had also escaped detection? I think it is, for we may be certain that wherever dust laden with anthrax germs is inhaled, some persons will become infected.

“In the Bradford worsted district, where what was called woolsorters' disease had been noticed for more than thirty years, external anthrax had not been found among wool-workers before 1880, that is, until after it had become known that woolsorters' disease was an internal form of anthrax.

It is very probable that cutaneous cases occurred repeatedly among those exposed to infection before 1880, and were overlooked. Since then the number of external cases has increased, and the number of internal cases has diminished.

"We may now enquire how can these differences of type in different industries and change of type in the Bradford district be explained? (1) In the London anthrax district workpeople have been educated to know the appearances of the cutaneous form of the disease. By notices on the walls of their workrooms they have been warned of the danger which might follow slight injuries to the skin, and of the importance of applying at once for treatment. Of the internal form they know very little from experience, not because these cases do not occasionally occur, but because they have not been discovered. These pulmonary patients do not apply to the hospital for treatment—the severe cases die too rapidly to allow this; the mild cases appear so simple, so like an ordinary "cold," that a fatal result is not anticipated until it is too late to avoid it. (2) The diminished quantity of dry, dusty, infectious hides imported has lessened the frequency of attacks, and has also reduced the number of pulmonary cases. In the Bradford anthrax district the prevailing type of the disease has changed from the pulmonary to the cutaneous form. This change has been due (1) to the greater care taken in foreign countries when the materials are packed to exclude 'dead' fleeces; (2) to the precautionary regulations which have been enforced in factories where noxious materials are manipulated. These regulations, when acted upon, lessen very much the amount of dust arising from dangerous wools and hairs, and also ensure greater cleanliness of workrooms and workpeople. Thus, by damping dangerous materials before being sorted, and withdrawing dust during sorting by exhaust fans, the type of the disease has been changed from the pulmonary to the cutaneous.

"It is a question whether noxious wools and hairs can be disinfected by steam at 230° F. without injury to the materials for manufacturing purposes. I think they can, but this remains to be tested scientifically.

"More than twenty-five years ago I predicted that pulmonary anthracæmia would be found at Kidderminster, Norwich, Leicester, Halifax, and other places. That prophecy has been fulfilled. I will again venture to predict that this form of anthrax will be found wherever persons inhale dust arising from anthrax-infected materials, whether they be wools, hairs, hides, skins, rags, or anything else.

"I believe that cases of pulmonary anthracæmia are not infrequently overlooked. I have myself made this mistake. I have also found cases when not expected. I have been told by medical men over and over again, when seeing a patient suffering from pulmonary anthrax, that some time before they had attended one or two very similar cases, and had certified the deaths as from pneumonia, which now they believed to have been anthrax. This mistake may very readily be made, even when the patient is examined with great care; the diagnosis in many cases is extremely difficult, and nigh to impossible before the heart fails and collapse threatens. In an ordinary case, when the patient lives from three to five days, the symptoms for the first few days are so slight, and like to those from common forms of catarrh, that I do not know how a correct diagnosis can be determined. In other cases heart failure is manifest at the commencement of the illness, and diagnosis is easy.

"For instance, a previously healthy man felt somewhat 'out of sorts' on a Sunday morning; he went out for a walk, and noticed that his hands were cold; he, therefore, called to see his doctor on his way home; within twenty-four hours he died from pulmonary anthracæmia. Again, a woolsorter at his work felt ill. He said to his mates on either side of him, 'I have done; I will go home; if you think it will do you any good, when I am dead you can have me opened!' On the second day following he died from woolsorters' disease, that is, pulmonary anthracæmia."

Now, I wish you to note particularly three points in these remarks of Dr. Bell. First, that cases of the disease are very apt to be overlooked or mistaken, showing clearly that careful observation and close study are necessary for its detection in many instances; second, that under altered conditions the prevailing form of anthrax among woolworkers is no longer pulmonary anthracæmia (the internal form), but malignant pustule (the external form); and, third, that the London people have been "educated" regarding the danger, and the means of safety or relief.

I shall not pursue this subject of anthrax further: it is one on which we could talk all night, and for many nights, without exhausting it. The subject cannot be dismissed, however, without mentioning the name of Dr. Legge, who, among many other earnest workers, has done yeoman service in the field of anthrax, and has had the merit of introducing the best antidote we have for the disease, namely, Professor Sclavo's anti-anthrax serum.

Those who wish to pursue this matter further are referred to Dr. Legge's Milroy lecture on "Industrial Anthrax."

Turning to another subject—lead-poisoning—I would direct your attention for a few minutes to some statements made by Dr. J. S. Clayton, of Accrington, in a paper which he published in the *British Medical Journal* for 10th February, 1906, entitled "Industrial Lead-poisoning: an Account of an Out-break among Yarn workers." This outbreak of plumbism occurred among women engaged in "noddling," i.e., stretching and shaking the dyed yarn in preparation for packing. In this case the "heavy orange yarns" appear to have been responsible for the mischief. But I shall let Dr. Clayton speak for himself:—

"Like all other lead-poisoning on a large scale from handling yarns, the trouble in this case came from the heavy orange yarns. Other coloured yarns into which chromate of lead enters—such as the green and light yellows—appear to contain in the dust, which can be washed off by water, a negligible quantity of lead. . . .

"*Dyeing, drying, and 'noddling.'*—The yarn is first washed and boiled, then passed through lime-water, and the excess wrung out. It is next put through a solution of subacetate of lead (and here obtains that which may afterwards cause trouble), then again through lime-water to fix the lead more or less in the fibre, and through a saturated solution of potassium bichromate, and finally of hydrochloric acid to raise the colour, and of saffranin to top it. The yarn is then dried in a hot-air chamber, and afterwards hung in a current of air to cool and to obtain a natural amount of moisture. It is then stacked for making up. Up to this stage the procedure has been entirely in the hands of men, and is a fairly safe one; no cases of lead-poisoning have been traced to the dyeing process or to the handling of the yarn when wet. It is entirely in the later stage of making ready for packing that the trouble arises.

"After the yarn has been dried it becomes the turn of women to handle it. They take hanks from the stack and hang them over wood bars, and shake out and stretch them straight, so that they may be passed on to the men who press and pack them. It is in this 'noddling,' this shaking out, and violently stretching of the hanks of yarn over the wooden bars, that the lead-laden bits of cotton fibre and dust are liberated, and float about the workroom, impregnating the atmosphere, and producing a fine cloud of yellow dust. In this instance about twenty women were occupied in the process, consequently the

amount of yellow dust was considerable; and, though the room was very large and high, the dust is heavy, and settles on their white overalls in quantity.

“Preventive measures.”—The firm worked under special rules, dating from 1895, but had not considered it necessary to adopt the recommendation contained in the report of the Dangerous Trades Committee, published in 1899, as to periodical medical examination, which would have brought to light the early cases as they arose. They supplied overalls and head-coverings, which were washed periodically. No food was allowed to be eaten in the workroom. Washing conveniences and an adequate supply of water were provided in the workroom, as also were adequate metal respirators, lined with a sufficient quantity of lintine or fine lint, a very suitable filter. They had arranged a trough in the floor, covered by a grating, and connected up with a fan, to dry and remove the dust. The women worked in this department on alternate weeks. In spite of these things, and notwithstanding that the firm had told off one of the senior women to see that the washing was properly carried out, the women were very indifferent to the matter.

“Since the affected cases have come to light they have been permitted to cease work one hour earlier, that they might not require to encroach on their own time in order to wash their hands and faces; nevertheless, we found many of them leaving the work with half-washed hands and chrome-laden fingernails. They would appear to differ in no respect from other workers in dangerous trades. To imagine that they will seek their own salvation from lead-poisoning, if it entails the slightest trouble, is to imagine a vain thing. The same difficulty applies to the wearing of respirators. They do not keep them on continuously. When the foreman turns his back they are removed, or, at anyrate, sufficiently removed for the purpose of conversation. It would be to foster a delusion to expect twenty young women to wear apparatus which would act more or less as a muzzle, and prevent them from talking for a fraction of eight hours a day, even though the consequences were as disastrous as they were to a number of these women.

“The only course to pursue was the one adopted when the trouble was found out. At one end of the workroom a 25 inch fan was erected on the ground-level, and closed in except at the bottom, where it was open to a covered trench, 2 ft. deep and 18 ft. wide, which passes round the side of the room, and over which, at intervals, hoppers are placed, and

over these the wood bars for 'noddling' the hanks of yarn. All this is partially covered in, so that during working hours, when the fan is in motion, the in-draught through the hoppers takes with it nearly all the dust, which is driven by the fan along an up-cast shaft, and conveyed outside the building.

"Cases of lead-poisoning.—The nine cases of poisoning which occurred present no points of particular individual interest worth recording; they were all examples of chronic lead-poisoning; there were no symptoms in any of them which could be attributed to chromic acid. One or two suffered from superadded acute exacerbations, and, although there were men engaged in the same workroom continually—that is, not in alternate weeks as were the women—none were at all affected. All the cases were among the women—additional evidence, if any were necessary, of the greater susceptibility to lead-poisoning of women. Two of the cases were of the encephalopathic type, both added acute epileptiform attacks to their chronic symptoms, to which, up to then, they had not apparently given much thought, and both were unconscious for the first three days of the seizure. One of these was affected with so severe a neuro-retinitis that for two or three weeks she was entirely blind. Three others developed more or less wrist-drop; all ultimately recovered sufficiently to follow other occupations in the same works."

Dr. Clayton then points out the importance of periodical medical examination. He adds in his conclusion—

"It is not all yarn that is dyed a heavy orange colour with chromate of lead that is equally liable to give off lead-laden dust. Yarns that are so dyed for the home trade are usually passed through a sizing of starch, which fixes the chromate of lead to the yarn much more securely, and lessens the tendency to fly in the 'noddling' process; those yarns command a somewhat higher price in the market. For the Eastern trade, however, for which these particular yarns are destined, the price is cut so fine that they are not sized; the extra labour and material would cut away the small profit. The two classes require to be distinguished, as lead-poisoning must be very rare in the former class."

Let us here note and consider some points in this very interesting paper:—

1. Dr. Clayton points out that while there are heavy oranges, greens, and light yellows, containing chromate of lead, it is only the first that is a real danger in the way of inducing plumbism.

2. That no cases of poisoning have been credited to the act of dyeing or handling wet yarns.

3. That the danger is confined practically to the manipulation of the dried yarn, which causes dust to fly about.

4. That the prompt and efficient removal of this dust is the way to avoid poisoning of the workers.

5. That it is practically impossible to get the workers to make proper use of the means provided for their safety, such as careful cleansing of the hands.

6. That although there were men engaged in the same work-room as the women (and exposed to the danger continuously, while the women had intermissions), none of them were attacked.

7. The very great importance of periodical medical examination of the workers.

All of these points are worthy of the most careful consideration. We see that a poisonous chemical does not always prove dangerous, and so a false sense of security might arise from a limited experience or careless observation. We learn that one part of a process may be harmless, while another is fraught with the greatest danger; that when the source of danger is recognised it can be removed when efficient means are employed; that we need not expect the workers to take care of themselves when any trouble is involved in doing so; and that when the two sexes are exposed to a common danger, one may suffer severely while the other escapes—again showing that a limited experience might give rise to a false sense of security. Lastly—and this is a very important point—it is evident that if careful systematic medical examination had been practised in this instance the disastrous results would have been avoided.

The lesson to be derived from the whole of this evidence is the need for constant care, close observation, and wise forethought. The art of dyeing, like other modern arts, is subject to changes—changes in the materials used and the methods of using them, so that old dangers may disappear and new dangers may crop up from time to time. Consequently changes in agents and methods should receive the close attention and study of skilled medical experts, and this recommendation should be embodied in working rules, which should be conscientiously carried out.

The health of our workpeople is a matter of supreme importance for the nation, and it should receive the attention it deserves. One thing seems certain, namely, that we cannot expect much help from the workers themselves in their present state of indifference.

I should like to quote other examples from the wide field of industrial diseases, but this paper is long enough, and I must forbear. One remark I shall make in passing, namely, that trade diseases, or their after-effects, are apt to be overlooked in hospital practice unless a careful inquiry is made regarding *all* the occupations in which the patient has been engaged during his lifetime. Usually the present employment is put on the card. But when questions are asked, it will often be found that a man has followed different trades at different periods of his life. For example, a man may come under your care suffering from cardiac and renal disease, and with marked arterio-sclerosis—and you find him put down as, say, a navvy—and you conclude that his diseased condition is due to hard work—exposure to cold and wet—and perhaps intemperance in the use of alcohol. But a very different light is thrown on the case if you elicit the information that he was engaged for a time in a white-lead work—for chronic lead-poisoning is well known as a potent factor in the production of the state of matters indicated above. In my opinion, this subject, *change of occupation*, has not received the consideration which it merits.

And now I may be asked the question—What do you want? What do you purpose should be done? Is not the health of the workers of this country under the care of the Factory Department of the Home Office, and does not the subject receive its constant care and attention?

To answer the last question first—I may say that I am well aware of the existence of the Department in question, and of the excellent work it has done, and is doing. Its chief—Dr. Arthur Whitelegge, C.B.—is a distinguished man, an authority on sanitary science, and he has put his heart into the work of the department over which he so worthily presides. On his staff are men of pre-eminent ability and energy—I have already referred to one of them in this paper. And there is a whole army of certifying factory surgeons spread over the country doing their duty faithfully, and, in many instances, making useful suggestions, and contributing valuable papers—among them I may be allowed to refer to my friend Dr. Alexander Scott, formerly of Tollcross—now of Glasgow—whose labours have received distinguished recognition.

And now I come to answer the first question—What do I want?—and what do I propose should be done? In the first place, I think more attention should be given to theoretical and practical teaching of industrial hygiene in our universities and medical schools. All medical men would benefit from

such a course of instruction—and for those who aim at factory work, or public health service, it would be specially useful. Such courses would naturally be conducted under the auspices of the Chair of Public Health and Hygiene—but a special lecturer should be appointed to devote his attention exclusively to this branch—to study the developments of industrial activity as bearing on the health of the workers, to lecture to students, and to take them on visits to public works and factories.

Secondly, I would suggest that certifying factory surgeons should give periodical lectures to the people of the works with which they are connected—pointing out to them the dangers to which they are exposed, and the precautions to be taken. Dr. Bell, of Bradford, tells us of the good effects of informing the workers of the London anthrax district of the risks to which they are exposed. He tells us they “have been educated to know the appearances of the cutaneous form of the disease. By notices on the walls of their workrooms they have been warned of the danger which might follow slight injuries to the skin, and of the importance of applying at once for treatment.” While acknowledging the value of such notices, however, I am strongly of opinion that they should be supplemented by *viva voce* instruction. Notices may—or may not—be read. But an earnest speaker, who could command the attendance and the attention of the workers, would surely have a good chance of carrying conviction to his hearers—and breaking down that attitude of resistance or indifference which has hitherto been so characteristic of that class.

Thirdly, I would urge—what is so strongly urged by certifying factory surgeons—namely, the establishment of periodical medical examinations in all trades in which there is any reason to suspect danger to health. This is a measure which would strike at the root of trade diseases—for it would enable the surgeon not only to get the cases of illness put under treatment in the early or incipient stages, but would also enable him to direct his attention to the causes of the evil, and have them removed or remedied.

I have only a few words to say in conclusion. The manufacturers of the present day are put to a great deal of trouble—and expense—and worry in their endeavour to obviate danger to the health of their workpeople. Many of them are not only just but generous in the matter. If censure is to be applied, it must be to the other side. And yet for them there may be some excuse. Carelessness seems inherent in mankind. Carefulness comes with training and knowledge.

Let us train and instruct our workers, and try to awaken them to an appreciation of the efforts of their employers on their behalf, and to a sense of the duty which they owe to themselves.

The question of the health of our workers is one of vital importance, and is deserving of the closest and most earnest study.

Such study in the long run will prove of the greatest benefit and profit—alike to the manufacturer, the worker, and the nation at large.

THE TREATMENT OF CONJUNCTIVITIS.

By A. FREELAND FERGUS, M.D.

It is my intention in this communication to compare the modes of treatment of conjunctivitis in vogue when as a student I entered the Glasgow Eye Infirmary over a quarter of a century ago, with those which I think, in view of modern pathological teachings, should now obtain.

My first appointment to the staff of that hospital was in the year 1883, and ever since that time I have been in active contact with the large mass of clinical material which is to be found there. I should like to sum up a few of the changes which have come over the scene during the twenty-two years that have elapsed since then. At that period the Scottish ophthalmic world in general, and the Glasgow Eye Infirmary in a very special manner, were still dominated by the teaching of Mackenzie—a man who in his day and generation was a giant. His book is rightly regarded as one of the classics of ophthalmic literature, and shows him to have been one of the greatest clinicians which Scotland has produced in recent times. Mackenzie died in 1868, just eleven years prior to my entering as a student the hospital which he helped to found. His clinical descriptions will likely remain of value for all time, and although modern pathology has in ophthalmic work, as in every other department of medicine, almost entirely changed our point of view, still we must ever speak with reverence of one of the great masters of a bygone age.

A circumstance which early aroused my attention was the comparative frequency with which the simple operation for cataract was followed by suppuration. I had the advantage

of seeing the practice of several surgeons of excellent ability, and although the actual figures are not available, it is probably an underestimate of the fact rather than an overstatement to say that suppuration followed in 8 per cent of the cases so as to involve the loss of the eye. No fault could be found with the manner in which the operations had been performed: disastrous results sometimes occurred even after the easiest and best extractions. Can anything be more distressing to a surgeon who has used every precaution of which he is capable than to find a case going thoroughly wrong? The situation seemed to be all the more terrible because at that time it appeared to be inexplicable. Here were a number of well-performed operations which failed, and no amount of foresight availed to avert the catastrophe. Probably at that time the results obtained at the Glasgow Eye Infirmary were very similar to those of other ophthalmic hospitals.

Another circumstance which early attracted my attention must here be mentioned. Shortly after my appointment to the staff, on one afternoon there came to the dispensary several cases of what appeared to be acute catarrhal conjunctivitis, the remarkable thing about them being that they all came from the same tenement in the High Street. On further enquiry it turned out that a large number of persons in that locality were similarly affected. Here, then, on a small scale was a state of matters closely resembling an epidemic. It was well known at that time that such forms of conjunctivitis as trachoma and gonorrhœal ophthalmia were highly contagious, but it was not then generally realised that some of the most common forms of conjunctival inflammation were extremely infectious. A few years later Dr. Weeks, of New York, discovered the bacillus which goes by his name, and thus gave the explanation of such occurrences. Weeks' discovery at once attracted attention to the bacteriology of the conjunctiva, and the question naturally arose—What light would bacteriological examination of the conjunctiva throw on the occurrence of suppuration after cataract extraction? Could we with the help of the pathologist foresee what cases were dangerous and what were not? Thus the importance, from a practical and clinical point of view, of the modern science of bacteriology suddenly emerged. About the year 1895 the idea was put to the test, the bacteriologist being called in to help to investigate the many problems which seemed to press for solution, and ever since that time regular observations have been made on the cases attending the hospital.

At first these were confined only to the patients on whom

it was proposed to operate, but of recent years as a matter of routine an examination is made of all the patients who enter the dispensary with conjunctival ailments. The oil immersion lens has come to play a part as essential in the diagnosis of conjunctivitis as the ophthalmoscope in the examination of the fundus oculi. In the modern ophthalmic clinics the one instrument is just as essential for diagnosis as is the other. Shortly after these early observations were begun one case alone showed that they were likely to be of considerable service.

A patient came who had already undergone an operation for senile cataract. One eye had been done, but, unfortunately, acute suppuration set in. A thorough investigation both of the eye which had been operated on and of the other was made by a competent bacteriologist, who reported that in the conjunctival sac on each side he found streptococcus. Yet there was no conjunctivitis present, and had that patient been operated on without such researches being made, the likelihood is that the second eye would have followed precisely the same course as the first. Here, then, was a virulent pyogenic organism found in the conjunctival sac without any manifest or outward sign; the real state of affairs could only have been discovered by the use of the oil immersion lens.

Other instances rapidly followed this first one, till it was quite obvious that bacteriology was likely to prove of the highest clinical value. To some of the other instances reference may be made later in this communication; meantime let that one instance be taken as typical of the rest.

The point which now attracted attention was as to how this parasite was to be removed. At first attempts were made to kill it, and that by two distinctly different lines of treatment. Pledgets of cotton-wool soaked in 1 to 10,000 solution of bichloride of mercury were kept constantly on the eye. At the end of eight days film preparations were again made, and the pathologist reported that the streptococcus was as abundantly present as ever. It was quite obvious that the drug employed had exercised no antiseptic influence of any moment. Nor is this to be wondered at when we consider the fact that immersion in a solution of 1 to 1,000 of bichloride of mercury for so long a period as twenty minutes is not sufficient to kill many of the pathogenic organisms. The result in this particular case was disappointing enough. The next attempt was by nitrate of silver, which was employed in the strength of 10 grains to the ounce of water. For the next eight days it was applied in the orthodox manner, the conjunctiva being

first carefully dried and then the drug employed. It certainly produced a very intense inflammation.

The conjunctiva became red and swollen, but unfortunately the parasite flourished as luxuriantly as ever. It was still to be found in considerable quantities. By this time the conjunctiva had become so inflamed that no man in his senses would have attempted operation. It was quite obvious that the nitrate of silver had made matters considerably worse. As a last resource plain sterilised water was used. The eyelids were everted and the whole conjunctival sac was thoroughly irrigated several times a day. What these so-called remedies did not accomplish this mode of treatment very soon effected. Within a comparatively short time the bacteriologist reported that he no longer found the streptococcus in the films. The parasite obviously had been mechanically removed, and not killed. Here it may be remarked that if the operation for cataract is performed in an absolutely aseptic manner, and on an eye in which bacteriological investigations have shown that no pathogenic micro-organisms are to be found in the conjunctival fluid, then it is all but certain that suppuration will not take place. Under these conditions, with one exception to be presently mentioned, the wound heals quietly and quickly, and in most cases the conjunctiva retains its normal whiteness. The exception referred to consists in this, that sometimes there is a considerable amount of iritis in patients who are rheumatic or gouty, which often causes some anxiety, but almost never the entire loss of vision.

Given the conditions of operation already specified, the operator will never see the old acute plastic iritis, ending in the shrinking and softening of the eyeball, which only too frequently happened in olden days. The modern biological pathologists have put every ophthalmic surgeon under a deep debt of gratitude, for the improvements of recent years have been entirely due to their painstaking researches.

As a rule, it may be said that no operation should be undertaken till the conditions have been investigated by a competent bacteriologist. In an earlier part of this paper a typical case was mentioned. It was only one of several which all taught the same lesson. It is not my intention to repeat the same story at any great length, but let me quote three other instances which all happened at the same time, and which seem to be very instructive. There were three children admitted to the hospital within a few days of each other. In each case there was a perforating wound of the cornea, and in all three the wounding instrument had also ruptured the lens

capsule, causing a traumatic cataract. In all of them part of the lens substance escaped into the anterior chamber. Two of them did well, the other did not, although all three were treated in a precisely similar manner, namely, the eye in each case was kept covered by a pledget of cotton-wool soaked in a weak bichloride of mercury solution.

In one case no organisms whatever were to be found in the conjunctival fluid; in both of the others pneumococci were present. In one the parasite was not abundant, and that eye ultimately recovered. In the third case the parasite was very abundant; irido-cyclitis set in with the formation of a hypopion, and the eye had ultimately to be removed.

Such observations help to throw some light on the treatment of ordinary conjunctivitis. The researches of Weeks, of Axenfeld, of Morax, and of many others have gone far to show that even the ordinary forms of conjunctivitis are for the most part due to micro-organic life. The important point is, therefore, to identify, so far as is possible, the micro-organism which is present, for that largely determines the prognosis of the case, and has a considerable influence on the line of treatment. The natural history of conjunctivitis is, comparatively speaking, a new subject. It is still in its infancy, and, no doubt, there is much yet to reward patient investigations made in the laboratory, which will be of service to those of us who are on the less elevated platform of the clinician. At present, however, it is possible to divide conjunctival micro-organisms into two groups. In the first, we include those which are frequently found on the membrane, but only under special circumstances cause inflammation. The chief members of this class are pneumococcus, staphylococcus aureus, staphylococcus albus, streptococcus. In the second, we place those which are generally believed always to cause an inflammatory attack. To this class belong the gonococcus, the diplo-bacillus of Morax, Weeks' bacillus, the Klebs-Loeffler bacillus, and the diplo-bacillus of Petit. This is not the proper place to enter into a description of these various parasites, nor of the means at our disposal for their identification. A good epitome of the whole subject is to be found in Mr. Bishop Harman's book entitled *The Conjunctiva in Health and Disease*; and Mr. Sidney Stephenson's little text-book entitled *Contagious Ophthalmia*, which was published as one of the Medical Monograph Series, contains a considerable amount of valuable information as regards the methods of research.

In conclusion, I should like to say something as to the

practical application of the remarks already made. To begin with, from a diagnostic point of view bacteriological investigation is of importance. Take a case of conjunctivitis; by no other method can we determine in the early stages whether such a case is due to, say, the gonococcus, to the Weeks' bacillus, or to the Morax diplo-bacillus. Yet such a differential diagnosis is of the first importance. If, when such a patient presents himself, you make a cover-glass preparation, and stain it with methylene blue and find small diplococci, the likelihood is that you are dealing with a case of gonorrhœal ophthalmia—a probability which amounts almost to a certainty if you find that the micro-organisms decolour by Gram's method. You thus early become aware that you are dealing with a disease which will require all your skill and attention if a favourable issue is to be obtained. In the early stages ordinary clinical observation entirely fails to differentiate between the various forms of acute ophthalmia. In a case similar to the one just described, it would be the duty of a surgeon immediately to shut out the healthy eye from all risk of contagion by the application of some such apparatus as a Buller's shield. The sooner, in any case, an accurate diagnosis is made the better for the patient.

But, further, biological research has very largely altered our views as regards the treatment of conjunctivitis, and even of blepharitis. Treatment must be viewed under two aspects. It is either prophylactic or else curative. In general medicine prophylaxis has made enormous strides, with the result that several of the specific fevers are now almost never seen; even tuberculosis has decreased very much since the malady was definitely recognised as infectious. The prophylaxis of conjunctivitis is of great importance, although, fortunately, it does not involve the issues of life and death. It has essentially a twofold aspect. When only one eye of a patient is infected it is necessary to protect the other from contagion, at anyrate in serious forms of conjunctivitis such as gonorrhœal ophthalmia. In the second place, those in attendance on the patient must be warned of their danger and every care taken that the disease does not spread. If one eye only be infected with purulent ophthalmia the other must at once be occluded either by a Buller's shield or by gauze, the outer layer of which is securely fastened down by means of colodion. When in a household one child has got a severe conjunctivitis, obviously it should not be allowed to use the same towels as are common to it and to the other members of the household. It ought not to be allowed to wash at a basin

which is used by others, but should invariably perform its ablutions at a running tap.

As regards actual treatment, or at anyrate that part of it which consists in the prescription of remedies, it seems to me that little if any progress has been made. Till a few years ago great importance was placed upon the ingredients contained in the lotion or drops which were prescribed for a patient.

The method in which the lotion was to be applied was considered to be of only minor importance. Nothing could better illustrate that view of the case than the directions drawn up by so eminent a man as Mackenzie for the use of his well-known lotion. To his mind it mattered greatly that the eye was bathed with a solution of a mercuric salt, but he did not find it at all incompatible with his ideas of prescribing to order the patient to bathe his or her eyes with a mixture of the lotion and the discharges removed from the conjunctiva at previous washings. Even within recent years Mackenzie's prescriptions have been re-issued, and it is almost incredible to us that his old directions appear in the new edition of his prescriptions. Many of these remedies which were so much in vogue in the year 1879 have fallen into disuse, and new ones have taken their place. The question is, are these new preparations of greater utility than those which they have supplanted, or does the whole method of conjunctival treatment require revision? I am at present of the latter opinion. A few years ago somebody invented protargol, an organic preparation of silver. It was announced as being marvellously efficacious, infinitely better than the nitrate, for the surgeon could use it without producing argyrosis. It was altogether to revolutionise ocular therapeutics. A few months showed how unfounded were such hopes, for the salt produced argyrosis quite as markedly as silver nitrate, and its great potency in curing disease may well be doubted when a few months later it was found necessary to invent another drug, this time known by the name of argyrol. Still more recently other drugs have been announced as possessing most wonderful properties. The momentous question arises, have they the efficacy which their advocates claim? Here let it be noted that most of the literature written by authors who are strongly in their favour contains almost no account of biological researches. One author, who has written very confidently about their superiority, has never in his clinic made a film preparation so as to enable him to investigate his cases. The evidence, so far as I have been able to weigh it, is entirely negative. To my mind, proof is

still wanting that these new remedies are of much assistance in the treatment of conjunctivitis. So far as proofs are available they entirely confirm the views just enunciated, and attention may be called to four distinct lines of argument.

1. Most cases of conjunctivitis heal of their own accord, just as do the specific fevers. In days gone by it was the practice of some physicians to administer small doses of belladonna to patients who were afflicted with scarlatina. No doubt a due proportion of such patients recovered. Would anyone at present attribute their recovery to the infinitesimal doses of belladonna which had been administered? Such cases as, say, the conjunctivitis of Weeks will recover after they have run their course if simply left alone and kept clean. Take such a case. You put into the conjunctival sac a few drops of a solution of protargol and the patient gets better. You are not entitled to regard this as cause and effect, unless you are prepared when a patient with a Weeks' conjunctivitis, who is under one of these new remedies, is found on a subsequent visit to the hospital to have developed a corneal ulcer, to attribute this ulceration to the remedy employed.

2. The agar-agar or serum-agar tubes, with the cultivations of the various micro-organisms, afford a tolerably reliable test as to the value of certain remedies. Again and again the colonies growing in these tubes have been for considerable periods immersed in a 15 per cent solution of protargol, and that without doing them the slightest harm. Mr. Harman points out, and probably truly, that as protargol is a colloid, its powers of penetration are likely to be very small. Quite recently Dr. Fortescue Brickdale wrote an interesting letter to the *British Medical Journal*, in which he said—"As to argyrol, I cannot speak definitely; but some years ago I investigated the bactericidal properties of collargol, and published the results in the *British Medico-Chirurgical Journal* for 1903. My laboratory experiments led to the same conclusion as those of Dr. Marshall and Dr. Macleod Neave—namely, that the bactericidal action of collargol is practically *nil*. I therefore investigated the clinical literature and was able to collect accounts of 44 cases. From a critical review of these cases I came to the conclusion that in cases proved to be septicæmia and pyæmia in man collargol had no effect, and that in toxæmic cases the effect was mainly seen in a fall of temperature very similar to that produced by hydrotherapy and certain antipyretic drugs."

3. My own clinical experience has by no means given me the favourable results of which other men speak. I confess

I have found the drugs of little service, and they have had a thorough and extensive trial in my hands. Here, for example, is a striking case. A gentleman came with senile cataract in each eye, and also with an inflamed conjunctiva. It was quite impossible to operate on the eyes in the condition which they presented at his first consultation. The matter was delayed for a month, and meantime he was seen every day by his own doctor, who applied a solution of protargol regularly and systematically. By the end of the month the conjunctiva had become considerably more inflamed, and the parasite to which the inflammation was due was much more abundant than it had been at his previous visit. The condition was certainly worse instead of better. What really put that man right was to give up all so-called astringent remedies and to irrigate him thoroughly three or four times a day with a pint of tepid normal saline. A tolerably extensive experience has shown that the best method by which to overcome a pure inflammation of the conjunctiva is saline irrigation.

4. Other surgeons have also had disappointing results. Scarcely a week passes but patients come with notes from medical men giving details of the treatment of conjunctivitis, both with the older remedies and with those now so much in vogue. Generally such communications wind up with an expression of great disappointment at the result. Recently a case came under notice in which collargol drops had been used for a period of six months. In such circumstances, one does not know whether to admire the more the faith of the physician or the patience of the sufferer. So competent an authority as Mr. Harman has little to say in favour of the new remedies. Within the last year I have seen a large number of cases in connection with the Workmen's Compensation Act, and in a considerable proportion of these one of the eyes had, in consequence of injury, been removed. Not infrequently the socket was found in a state of chronic suppuration, and that many months after the enucleation. It seems to me that if these drugs really had the value which some of their advocates claim for them, such a state of matters should have been put right within a few days; for in the histories of most of them, mention was made of the extensive use either of protargol or of argyrol.

A PLEA FOR THE STUDY OF THE DEAF CHILD AND FOR THE TEACHING OF SPEECH TO THE SEMI- DEAF AND SEMI-MUTE.

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(Concluded from p. 16.)

PART II (continued).

Note.—It did not seem worth while to the writer to add in each case the vibration value of each note quoted from Galton's whistle. All the notes of the whistle are above the voice or speech area, which latter does not extend higher than 800 or 900 vibrations. The lowest limit of Galton's whistle, 22·4 mm., is about 3,300 vibrations; 12 mm., about 6,200 vibrations; 4·5 mm., about 13,000 vibrations; and 1 mm., about 31,000 vibrations. The whistle in the testing of deaf-mutes is of no practical value, but for the purposes of scientific enquiry it is of great value. The following 34 cases were tested during the school session 1905-1906, and complete the hundred cases included in this research :—

CASE 67.—Robert H., æt. 15 years. Born deaf. Both membranes normal; throat normal. Hears nothing by either ear—a most unusual condition in a deaf-born child. Speech good, lip-reading fair, eyesight good; intelligence fair.

CASE 68.—Adolph R., æt. 15 years. Mr. Addison thinks he was born deaf, but schedule is not filled up, or rather, is wanting altogether. Has strumous ulcer of left cornea with fair amount of opacity. Both membranes are normal; throat (pharynx) is thickened. On the right side c^1 (256 vibrations) is heard, and this island extends upward to 6 mm. Galton's whistle. On the left an island begins at d^1 (288 vibrations) and extends to c^3 (1,024 vibrations). Hearing on the left side seems feeble. He hears some vowels. Speech and intonation are fair, and lip-reading is also fair. Vision interfered with by corneal opacity. Intelligence is good.

CASE 69.—Robert M'D., æt. 15 years. The schedule states that he was born deaf, but he stated to Mr. Addison, when questioned, that he was born hearing and lost it from a fall, though he does not know at what age this occurred. There is no information on the medical side of the schedule. Both membranes are perforated; throat is normal. On the right, g (192 vibrations) is heard, and this island extends to 0·7 mm. of Galton's whistle. On the left an island begins at c^1 (256 vibrations), and extends to 0·9 mm. of Galton's whistle.

Hearing for Galton's whistle is more acute than that of any hearing person in the room when the test is made. He is said to hear all the vowels. Speech and lip-reading are *nil*. The eyesight is good, but intelligence poor.

CASE 70.—Isabella S., æt. 15 years. Born hearing. Hearing lost at 8 years from specific disease. Her sister Mary, æt. 13 years, was born deaf. There are five sisters in the family, three of whom show the taint of specific disease. Membranes and throat are normal. On the right side G_1 (48 vibrations) and upward to 20 mm. Galton's whistle are heard as one continuous island. On the left side c^1 (425.6 vibrations) is heard, and upward to g^8 (1,536 vibrations) is heard as a continuous island. Then another island begins at g^4 (3,072 vibrations), and extends to 20 mm. of Galton's whistle, thus forming a second island. Speech and intonation of voice very good, lip-reading very good. Eyesight bad, and intelligence is very good.

CASE 71.—Mary S., æt. 13 years, sister of last girl. Born deaf. Membranes and tonsils normal. This girl was very nervous at the examination, but throughout the middle part of the scale the answers were reliable. On the right side c (128 vibrations) is heard, and this island extends to 22 mm. Galton's whistle. On the left the hearing is not so good, but the hearing island is almost the same as on the right side extending from c (128 vibrations) to c^4 (2,048 vibrations), g^4 and c^5 are doubtfully heard, but 21 mm. Galton's whistle is heard. She does not hear vowels. Speech, intonation of voice, lip-reading, and intelligence all very good. Eyesight good.

CASE 72.—Wm. R. C., æt. 13 years. Said to have been born hearing and to have lost hearing at 18 months from measles and meningitis. Both membranes normal, and throat normal. On the right side G (96 vibrations) is heard, and upward to 5 mm. of Galton's whistle. On the left side hearing begins at c (128 vibrations) and upwards, though rather feeble, to 5 mm. of Galton's whistle. Speech, intonation, and lip-reading poor; eyesight and intelligence good. There has been no oral training.

CASE 73.—Mary H., æt. 13 years. Born deaf. Right membrane retracted; left normal; throat almost normal. On the right side c (128 vibrations) is heard, and this island extends to g^2 (768 vibrations). Nothing above this is heard. On the left side a similar island exists, but the hearing is less acute. No oral training has been given in school. The eyesight is good and the intelligence is good. The voice is poor.

CASE 74.—Bella H., æt. 13 years. Born deaf. There were eight children, five of whom are dead, and there is a brother, æt. 5, said to be deaf. Left membrane is retracted; right normal; tonsils normal; adenoids well marked and should be removed. No hearing on the right side. On the left side a (212.8 vibrations) is heard, and this island extends to c^2 (512 vibrations). Nothing above this is heard. Has had no oral training. Intelligence very good. The

teachers reported that the eyes were weak, but on testing with Snellen's types the eyesight was found to be perfect.

CASE 75.—Lizzie H., æt. 11 years. Born hearing. Hearing lost from cerebral disease. There are eight in the family, all alive. Membranes are much retracted; tonsils normal; adenoids slight. On the right side *c* (128 vibrations) is heard, and this island extends to *g*¹ (384 vibrations). On the left side *d* (144 vibrations) is heard, then *a* (212 vibrations) is heard, *d*¹ (288 vibrations) is heard, and *a*¹ (425 vibrations) is heard. Has had no oral training. Eyesight good; intelligence very good.

CASE 76.—John L., æt. 12 years. Born hearing. Hearing lost at 6½ years from cerebro-spinal meningitis. Right membrane lustreless, but otherwise normal; left retracted and incus well seen; tonsils normal; adenoids well marked. Nothing is heard in the lower part of the scale by either ear. No fork is heard. Small islands occur on the right ear from 25 to 23 mm. Galton's whistle, and again about 7 to 8 mm. On the left ear he hears very decidedly 7 to 8 mm. of Galton's whistle. No hearing in the voice area exists here at all. Speech *nil* and lip-reading poor; eyesight good and intelligence good.

CASE 77.—Robert R., æt. 13 years. Born deaf. Had an older brother, æt. 14, in the institution. Right membrane perforated in the posterior inferior quadrant. Healed perforations in left membrane. Tonsils large, and adenoids well marked. On the right side *G*₂ (24 vibrations) is heard, and this island extends to 3.7 mm. of Galton's whistle. From 15 to 12 mm. the sound is painful to him. On the left side hearing begins at *g*⁴ (3,074 vibrations), and the island extends to 5 mm. Galton's whistle. A, O, U amongst the vowels are distinguished. Speech *nil*; lip-reading poor; eyesight good; intelligence good. Although the eyesight was reported good by the teacher in this case, the boy, when tested with Snellen's types, was found to be very defective. There is no oral training given in this case.

CASE 78.—Alex. M'G., æt. 13 years. Born deaf. Younger brother in institution, also a second cousin. Father and mother are second cousins. Both membranes are retracted; throat normal, and without adenoids. On the right side hearing probably begins at *d* (144 vibrations), and extends to *g*² (768 vibrations). Hearing is very doubtful after that, but *g*³, *c*⁴, *g*⁴, *c*⁵ are faintly heard if the forks are strongly struck. With Galton's whistle 15 to 10 mm. are heard, but hearing outside of this area is doubtful. On the left side *c* (128 vibrations) is probably heard as a single note, then hearing reappears at *a* (212.8 vibrations) and extends to *g*³ (768 vibrations). Above this no fork is heard, but 15 to 10 mm. of Galton's whistle are well heard. Vowels are not made out. Speech *nil*; lip-reading poor; eyesight and intelligence good.

CASE 79.—Alex. S., æt. 13 years. Born deaf. Two sisters and one brother are, or have been, in the institution. Five children are

in the family, two of whom are dead—one by water in the head and the other by convulsions. Mr. Addison has noticed distinct degeneration from the older to the younger members in the institution. Both membranes normal, but adenoids well marked. This boy seems rather stupid, and with the lower forks the answers are so variable that he cannot be trusted. Even with the higher forks answers are not very reliable. Galton's whistle is unheard. Speech *nil*; lip-reading *nil*; eyesight is rather poor; intelligence fair (in class).

CASE 80.—Henry M'L., æt. 13 years. Born deaf. Both membranes normal; tonsils normal; adenoids slight. The answers to the tests in this case are not very reliable, but he seems to hear definitely with the right ear *C* (64 vibrations), *c* (128 vibrations), and then *d*¹ (288 vibrations) to *c*⁵ as a well-marked island; the latter note, *c*⁵ (4,096 vibrations), is heard painfully. Galton's whistle is heard from 25 to 19 mm. On the left *C* (64 vibrations) and *c* (128 vibrations) are heard, then *d* (144 vibrations) is heard. A definite island begins at *a* (212 vibrations), and extends to *g*² (768 vibrations), but nothing above this is heard. Hearing for voice exists, but the boy cannot imitate what he hears. Speech, intonation of voice, lip-reading, and intelligence all fair. Eyesight good.

CASE 81.—Robert M'M., æt. 13 years. Born deaf. One older member of family deaf-mute. There were seven in the family—one was stillborn, and one died of whooping-cough. Membranes normal, tonsils normal, adenoids very slight. On the right *C* (64 vibrations) is heard, and *c* (128 vibrations) is also heard. A definite island begins at *g* (192 vibrations) and extends to *c*³ (1,024 vibrations). Then *c*⁴ is heard (2,048 vibrations), also *g*⁴ and *c*⁵ (4,096 vibrations); *g*³ is unheard. On the left side *G* (96 vibrations) is heard, and an island extends to *c*³ (1,024 vibrations). Then *c*⁴ is heard (2,048 vibrations), but nothing is heard above this. Hearing for voice can be proved in this case, but the boy cannot imitate the voice. Speech and intonation of voice fair; lip-reading poor; eyesight good, and intelligence very good.

CASE 82.—John G., æt. 11 years. Born deaf. There is no schedule, and the information from parents is unreliable. Membranes normal, tonsils enlarged and uvula bifurcate, adenoids well marked. In this case tests are doubtfully appreciated; cerebration is slow. The only satisfactory tests are with Galton's whistle, where 18 to 16 mm. are heard by the left ear. Speech *nil*; intonation of voice fair; lip-reading *nil*; eyesight and intelligence both poor. No oral training is being given.

CASE 83.—Wm. G., æt. 10 years. Born hearing. Hearing lost at 3 years, cause being unknown. Membranes thickened and lustreless; is a mouth-breather, with enlarged tonsils and slight adenoids. A brother died of spinal disease. In this case answers are, on the whole, unreliable, but *c*⁵ (4,096 vibrations) is undoubtedly heard on the right side. Speech *nil*; intonation of voice shrill; lip-reading *nil*; eyesight and intelligence both good. No oral training is being given.

CASE 84.—Wm. E., æt. 11 years. Born hearing. Lost hearing at $2\frac{1}{2}$ years from measles. Tonsils normal; adenoids well marked; auditory canals narrow, but both membranes seem thickened. On the right side an island begins at G (96 vibrations) and extends to g^3 (1,536 vibrations); again, he hears c^5 (4,096 vibrations). On the left side he hears from C (64 vibrations) to g^3 (1,536 vibrations). Again, c^5 (4,056 vibrations) is heard. Galton's whistle is unheard. The vowel "A" is heard, but not any other. Speech poor; intonation of voice fair; lip-reading fair; eyesight and intelligence good. No oral training is being given.

CASE 85.—Walter K., æt. 12 years. Born deaf. Two others in family deaf-mute, and in institution at present. He belongs to the Ayrshire family. Father is very deaf, but speaks; mother is deaf-mute. Both membranes retracted; adenoids slight. On the right side hearing begins at a (212.8 vibrations), and extends to 8 mm. Galton's whistle. On the left side the island probably begins at G (96 vibrations); g (192 vibrations) is not heard, but with this exception the island extends to 8 mm. of Galton's whistle, with a doubtful area at 10 mm. Speech, intonation of voice, and lip-reading fair; eyesight and intelligence good.

CASE 86.—James B., æt. 10 years. Born hearing. Became deaf at 3 years old from whooping-cough. Squints with the right eye. Membranes much retracted; tonsils and uvula thickened, adenoids slight. On the right side hearing begins at g^3 (1,536 vibrations); he hears c^4 (2,048 vibrations), but higher than this answers are quite unreliable. On the left side answers are reliable in the lower notes. He hears from c (128 vibrations) to a (212.8 vibrations), then after a gap he begins at d^1 (288 vibrations) and hears up to g^1 (384 vibrations), but beyond this no fork is heard, and his answers to Galton's whistle are quite unreliable. Speech *nil*; intonation of voice poor; lip-reading *nil*; intelligence poor. Blind in one eye, the other eye good. This seems a case for training by any method by which the boy's intelligence can be reached; oral training would be wasting time.

CASE 87.—Thomas M.K., æt. 11 years. Born deaf. Ayrshire family. One younger brother in institution. Both membranes normal; adenoids slight, but pharynx normal. On the right side an island begins at G (96 vibrations) and extends to g^2 (768 vibrations). Then he begins to hear again at g^4 (3,072 vibrations), and this island extends to 5 mm. Galton's whistle. The hearing on the right side is rather feeble. On the left the hearing is more decided and better. It begins at C (64 vibrations) and extends as a well-marked island to 5 mm. Galton's whistle. There is no vowel discrimination. Speech, intonation of voice, poor; lip-reading poor; intelligence fair; eyesight good. There has been no oral training.

CASE 88.—R. C., æt. 12 years. Said to have been born deaf. Membranes intact, uvula bifurcate, adenoids abundant. He seems to hear on the right side a little at C (128 vibrations), but nothing

else on this side. On the left hearing begins at G (96 vibrations), and this island extends to g^3 (1,536 vibrations). Galton's whistle is heard on this left side from 25 to 15 mm. Speech poor; intonation of voice shrill; eyesight poor; lip-reading poor; intelligence very poor. The boy is mentally defective all round.

CASE 89.—Jessie W., æt. 11 years. Born deaf. Schedule awaiting. Membranes normal, adenoids well marked, but tonsils normal. No hearing can be discovered in either ear. Speech poor; intonation of voice poor; lip-reading is fair; eyesight good; intelligence very good. Although reported by the teacher to have good eyesight, testing with Snellen's types discovered the eyesight to be rather poor.

CASE 90.—Elizabeth C., æt. 10 years. Born deaf. Has a sister—a deaf-mute—in the institution. Medical certificate not filled up. Both membranes intact, but dull; the uvula bifurcate at tip; tonsils slightly enlarged; adenoids well marked. Has scrofulous marks on neck. On the right side are heard c^2 (512 vibrations), g^2 (768 vibrations), c^3 (1,024 vibrations), g^3 (1,536 vibrations), c^4 (2,048 vibrations), and c^5 (4,096 vibrations), the last note distinctly and undoubtedly. A small island with Galton's whistle 15 to 8 mm. is heard. On the left c^5 is heard without doubt, and a small island 15 to 8 mm. Galton's whistle is also heard. Vowels are not heard in this case. Speech, intonation, and lip-reading all good; eyesight good; intelligence very good.

Note.—Dr. Leitch, Mr. Addison, and Dr. Love, who have been constantly present at the examinations, agree that the last ten cases (80 to 90) are on the whole too young or inexperienced for accurate testing, and that, whilst the results are probably reliable as far as they go, the extension of the hearing areas might be expected if retesting were done some years later. These remarks will apply to the remaining ten cases with perhaps even greater force, as we are getting to the younger pupils of the school.

CASE 91.—Mary A., æt. 13 years. Born hearing. Said to have lost hearing from inflammation of lung and bowel. Has had measles and whooping-cough. There is a healed perforation in the lower part of the left tympanic membrane. The right membrane is retracted and dull. The tonsils are slightly thickened. Probably she has adenoids, but the fingers cannot be introduced into the nasopharynx. On right side D_1 (36 vibrations) is heard as a single note, then A_1 (53.2 vibrations) is heard, and from this to c^1 (256 vibrations), or even to d^1 (288 vibrations). She hears again g^4 (3,072 vibrations) and c^5 (4,096 vibrations), but nothing else. On left side hearing begins at c (128 vibrations), and she seems to hear also g (192 vibrations), but otherwise her answers are unreliable as regards this ear, though apparently reliable on the right. There is no speech, lip-reading is poor, intonation of voice is poor, and intelligence is fair; the eyesight is good.

CASE 92.—Alex. R., æt. 10½ years. Born deaf. Membranes are

normal, tonsils large, and adenoids pretty well marked. In the right ear hearing begins about c (128 vibrations) and extends continuously to g^3 (1,536 vibrations). He hears again at c^5 (4,096 vibrations), but nothing above that. On left side hearing begins at c (128 vibrations) and extends, as on right, to g^3 (1,536 vibrations), begins again at g^4 (3,072 vibrations), and extends onwards to 5 mm. of Galton's whistle, the latter being heard very well and without mistakes. Speech and lip-reading are poor, intonation of voice fair, eyesight is good, and general intelligence is poor. The boy is probably mentally defective.

CASE 93.—James B., *æt.* 11½ years. Born deaf. Tympanic membranes normal; external auditory canals narrow; adenoids slightly marked; throat otherwise normal. In the right ear he seems to hear G_1 (48 vibrations) as a single note. He hears again from d (144 vibrations) right on to 8 mm. of Galton's whistle. On the left side hearing begins at G_1 (48 vibrations), and extends as a continuous island to 11 mm. of Galton's whistle. [This boy and Case 92 are noted as being quite reliable in their answers.] Speech is *nil*, lip-reading poor, intonation of voice is poor, eyesight is good, and intelligence poor.

CASE 94.—Mary K., *æt.* 15 years. Schedule wanting, but girl states she was born deaf. Membranes and throat normal. She had a deaf brother, now dead, and she has some deaf relatives. In the right side she hears G (96 vibrations), but nothing else in any part of the scale. She makes no mistake with this note on repeated testing, and she is to be classed with the first 80 as to reliability, having been unavoidably omitted during the earlier tests. She hears nothing on the left side. Speech and lip-reading are poor, eyesight is poor, and intelligence very poor. The girl is probably mentally defective.

CASE 95.—Effie M'A., *æt.* 15½ years. Born deaf. Two others in family are deaf and dumb, and all three have been in the institution. The tympanic membranes are normal; the tonsils are enlarged. On the right side she hears g^2 (768 vibrations), and the island extends right on to 6.5 mm. of Galton's whistle, with the exception of a small area round g^4 (3,072 vibrations), which is not heard. On the left side she hears from c^3 (1,024 vibrations) to 9.5 mm. of Galton's whistle. The forks are feebly heard, and require to be strongly struck. This girl is to be classed with the first 80 as to reliability. Speech and lip-reading are poor; eyesight is good, and intelligence good.

CASE 96.—James S. S., *æt.* 15¾ years. Born hearing. Hearing lost at 2½ years from "teething." Cerumen has to be removed from the left ear, and then all the membrane is discovered to be gone, except Shrapnell's membrane. The right membrane is retracted and thickened, and there is the scar of an old perforation. The boy has had measles, and has marginal blepharitis. He hears nothing at all with the right ear. On the left ear he hears c (128 vibrations), a (212.8 vibrations), and g^1 (384 vibrations) as single notes, but

nothing else on any part of the scale. This boy is to be classed with the first 80 as to reliability. Speech and lip-reading are poor; the intelligence is fairly good.

CASE 97.—Robert C. S., æt. 12½ years. Born deaf. Has one deaf-mute brother, who was educated at Donaldson's Hospital. The mother is a deaf-mute, and the father a semi-mute. Membranes are normal; the tonsils are large, and should be removed; adenoids are fairly well marked. He hears with the right—forks g^3 (1,536 vibrations), c^4 (2,048 vibrations), d^4 (3,072 vibrations), c^5 (4,096 vibrations), and with Galton's whistle from 24 to 4 mm. very acutely. On the left side he hears c^2 and c^3 (512 and 1,024 vibrations); he also hears forks g^3 (1,536 vibrations), c^4 (2,048 vibrations), g^4 (3,072 vibrations), and c^5 (4,096 vibrations). With Galton's whistle he hears 24 to 4 mm. very acutely. Both ears hear the higher notes of Galton's whistle almost more acutely than any person in the room. Speech and lip-reading are fairly good; intonation of voice is good; eyesight is good, and intelligence is fairly good.

CASE 98.—Richard S., æt. 10½ years. Born deaf. Both father and mother are deaf and dumb. Both membranes are indrawn, chiefly the left; the tonsils are slightly enlarged, but there are no adenoids. On the right side he hears from a (212 vibrations) to c^5 (4,096 vibrations). Galton's whistle is not heard. On the left ear he hears C as a single note, after which hearing begins again about a (212 vibrations), and extends to c^2 (512 vibrations); c^3 (1,024 vibrations) and g^3 (1,536 vibrations) are heard as single notes. Galton's whistle seems to be heard about 15 or 20 mm., but the auditory nerve seems easily fatigued. Speech is fairly good; lip-reading is fair; intonation of voice is good; eyesight is good, and intelligence very good.

CASE 99.—Fred. Y., æt. 10 years. Born hearing. Became deaf after measles at 2½ years. There is an open, but dry, perforation in the antero-inferior quadrant of the right membrane. The left membrane is dull and lustreless. The pharynx is normal, but there are slight adenoids. On the right side he hears from G_2 (24 vibrations) to G (96 vibrations), and nothing else. Evidence of hearing these lower notes is undoubted. On the left side he hears C_2 (16 vibrations), never making a mistake on to C (64 vibrations). He hears again c (128 vibrations) as a single note, then from d^1 (288 vibrations) on to 16 mm. of Galton's whistle, the higher forks— g^3 (1,536 vibrations), c^4 (2,048 vibrations), g^4 (3,072 vibrations), and c^5 (4,096 vibrations)—being heard acutely. The speech is fair, the lip-reading fair, the voice is guttural, the eyesight is good, and the intelligence good.

CASE 100.—Kate G., æt. 9 years. Born hearing. Lost hearing from meningitis at 3 years. Then had measles, whooping-cough, and diphtheria. The membranes are normal; adenoids are well marked, but otherwise the throat is normal. On the right side from G (96

vibrations) to g^1 (384 vibrations) is heard, but nothing above this. On the left side she hears c (128 vibrations) to d^1 (288 vibrations), but nothing above this. The hearing islands in this case are in the voice or speech area of the scale. Speech, lip-reading, intonation of voice, and general intelligence are all very good; the eyesight is good.

It seems doubtful whether any tabulation of the above cases would be useful. It seems likely to be more useful that the writer put down his conclusions as plainly as possible, and allow the reader to check these by reference to the cases themselves.

1. Of the 100 children examined, 62 were born deaf and 31 born hearing, whilst with regard to 7 the state at birth was doubtful.

2. With the exception of one family in which 1 was born deaf and 2 were born hearing, and in which the cause of deafness was known to be syphilitic, none of the cases of acquired deafness had any deaf-mute relative.

3. The 62 deaf-born children had 68 deaf-mute relatives, almost all in the closest relationship with them—father or mother, brother or sister.

4. There were 10 semi-mute and 10 semi-deaf children examined, together forming 20 per cent of the whole number.

5. Entire absence of hearing is uncommon in congenitally deaf children. Amongst the 62 congenitally deaf children it occurred in 4 cases, whilst in 2 other children no hearing could be discovered in one ear. As some of those 6 children were very young, and may possibly have failed to appreciate the tests, hearing may yet be discovered at subsequent testing, but the results of this enquiry point to the conclusion that entire absence of hearing occasionally exists in the congenitally deaf.

6. Total absence of hearing is not uncommon in those whose deafness is post-natal or acquired, and is quite common amongst the semi-mute, whose speech is consequently a recollection of their earlier hearing years. On the other hand, the hearing of the semi-deaf is much greater than that of any other class of deaf-mutes, and these—the semi-deaf—are for the most part cases of acquired deafness. The hearing of the semi-deaf is often great enough to be profitably used in teaching.

7. The naso-pharynx of deaf-mute children is often diseased. Post-nasal adenoids, or enlarged tonsils, or both, are present in about two-thirds of them, and these hypertrophies are so marked in about one-third that they should be removed, because they interfere both with the general health of the children and with the development of their speech.

8. The eyesight of deaf children is often defective. Over 60 per cent of the children at present in the Glasgow institution—these figures do not refer exclusively to the 100 cases dealt with in this research—have defective eyesight.

9. Ten to 15 per cent of deaf children are so slow in class that they may be called "defective." It is not meant that these are "idiotic," for idiotic or imbecile children are not admitted to the institutions for the deaf. But some of them will fail to earn their livelihood by whatever system they may be trained. Some of them, on the other hand, show ability in the school workshop, and have their intelligence quickened by "trades" training in their later years. Some of these class defectives might be helped by improving their eyesight. But a class amongst deaf-mutes must be recognised as true degenerates or defectives.

This enquiry being, in part at least, a plea for the teaching of speech to the semi-deaf and semi-mute, it may be well to look a little more closely at that class to whom, according to the writer's idea, speech should *not* be taught.

The number of children in Glasgow who may be classed as defective is not great enough to enable one to draw safe conclusions as to their management, and there is in Glasgow no experiment going on in the treatment of defective deaf-mutes. But in London the number of deaf-mute children under instruction is larger than in any community in the world, and the defectives are separately educated.

Within the London area and under tuition by the London County Council in day schools and in institutions there are 620 deaf children, whilst at evening schools there are 307. The system of teaching is oral throughout, except at the Homerton school, which is a combined school for defective-deaf children of both sexes, and of all ages up to 16 years. Excluding the evening schools (where the children are over 16 years), this Homerton school, containing, as it does, 70 children, represents about the usual 10 per cent of defectives amongst the deaf (70 in 620). Of the 70 children, 40 are resident and 30 are day scholars. Of the 620 children attending the London day schools and resident in the three London institutions (Homerton, Annerley, and Oaklodge) there should be, and I am assured by Mr. Jones there are, 150 semi-mute or semi-deaf.

But the interesting fact for the purposes of this enquiry is that 21 semi-deaf children are attached to the Homerton School for Defective Deaf-Mutes. If hearing and remaining speech are of the value and importance in education assigned to them by the present writer, this fact requires some explanation; and through the kindness of Mr. Barnes, the headmaster of Homerton school, Mr. Jones, the superintendent of the London County Council schools for the deaf, and Dr. Kerr, the Medical Officer of the London County Council, the writer is enabled to give a closer view of these 21 defective semi-deaf children in London. No fork tests are given, but the condition of the hearing is fairly well defined by stating that hardly any of the 21 children hear whispered words, whilst all hear and distinguish either sentences, words, or vowels spoken at distances varying from one to six paces. Of the 21, 11 are stated to have been born deaf, whilst 3 more have the cause of deafness put down as congenital

syphilis. Of the remaining 7, the causes of deafness are given as scarlet fever (1), measles (1), polypus (2), inflammation of brain and convulsions (2), and malnutrition (1).

This is not the record of the partial destruction of hearing by post-natal disease, as semi-deafness usually is; it is the record of mental deficiency associated with congenital deafness. But a further investigation into the 21 defective semi-deaf children of London reduces their number considerably. Five of them are not mentally defective at all, but have come to Homerton because their education has been bungled. They have been kept at ordinary hearing schools—where no provision for their hardness of hearing existed—till the ages of 12, 13, or 14 years, and now they cannot take their place even amongst the more heavily handicapped and deafer children. Mr. Barnes, the headmaster at Homerton, hopes to transfer some of these children to Annerley or Oaklodge, the London residential schools for older boys and girls.

Eleven of the 21 children have bad eyes, several being almost blind. Three cases of "aphasia and word-blindness" are given. So that when the defective semi-deaf children of the London area are critically considered they are found to form a very small class, and to consist chiefly of mentally defective children, for the most part congenitally deaf, with only 4 or 5 children from that class which forms the bulk of the semi-deaf, viz., children born hearing who have become partially deaf from post-natal disease. And the visitor to the school reads "defective" across the face and in the work of every class. The stigmata of degeneration are seen everywhere—microcephalics, almost blind children, cases of congenital syphilis, undergrown and badly-developed children are common. And yet these are the children who in almost every school in almost every country in the world are being educated alongside the semi-deaf and semi-mute, who are but little removed from the ordinary hearing child. The single fact that the London County Council have separated these defective children from the rest of the deaf is of the first importance in the foundation of a scientific classification for the education of the deaf.

Hartmann¹ devotes a large section of his book to the education of deaf-mutes, and goes into the system of instruction known as the oral method with a thoroughness worthy of a practical teacher. But he seems to think the finger method hardly worth mentioning, except as an historical curiosity. He says, "The finger method is very little used, a fact which corroborates our unfavourable opinion of it. France is almost the only country in which it is taught." He seems not to know, or if he knows, he seems deliberately to ignore the fact that in Britain and America there are more deaf-mutes under tuition than in Germany and France, and that in Britain and America, both at the time he wrote and now, a quarter of a century later, the bulk

¹ *Deaf-Mutism*, translated by Cassels (Baillière, Tindall & Cox, London), 1881.

of these deaf and dumb children are being taught by the finger method. Hartmann hints at the advisability of classifying deaf-mutes according to intellectual ability, but they are all to be taught orally.

Mygind¹ says that "there can no longer be any doubt that the method of instruction by which the deaf-mutes are taught to speak, and which, although it originated with a Spanish monk, Pedro de Ponce, *injuria temporum*, has received the name of the *German method*, is superior to the so-called *French method*, by which deaf-mutes are taught to communicate with their fellow-creatures by means of signs. The question is, whether the oral method is that which is most serviceable for *all* deaf-mutes, or whether there are not some deaf-mutes who have such a great difficulty in acquiring speech that too great labour is expended on learning it, to the disadvantage of other useful acquirements and knowledge necessary to them in after life. The solution of this problem must be left to pedagogues, but it may not be out of place to remark that, in the discussion which is now raging, it would seem that it is often forgotten that the use of the one or other method by deaf-mutes is not the end but the means."

The problem stated above by Mygind is the problem stated for solution in this enquiry. That the solution should be longer left in the hands of the teacher is what the present writer would strongly protest against. It is a clinical, not a pedagogical question. To the teacher of the deaf he would say—"This is no place for you alone; I must see the child first. The deaf child has been lost sight of long enough amidst the dust and din of contending systems. This must cease, and the child himself must be studied. After I have examined the child we will discuss where he is most likely to do well, and you may then take him in hand."

What, then, has this clinical survey of the deaf child taught us? For it is needless to point out here that the patient study of the deaf child himself is of much greater value than a hurried run round the deaf-mute schools of the world.

Well, it has taught us, first, that deaf children, as they are represented in institutions for the deaf, are not a homogeneous class. The only reason for their all being there is that we have at present nowhere better to put them. Some of them enter the institution speaking children and leave it dumb children. To some of them speech is taught when it would be as reasonable and hardly less difficult to teach them the art of flight. To the great bulk of them, in Britain and America, a compromise is taught under the rather taking name of the "combined system." Here speech is sometimes described as "an accomplishment"—an accomplishment about as

¹ Mygind, *Deaf-Mutism*, 1894, p. 249 (Rebman, Limited, London). This book is our best work on the pathology of deaf-mutism, but its author has seen little of the deaf-mute child, except on the *post-mortem* table. He has no connection with any institution.

useful as pianoforte playing, and which the deaf child takes care to drop as soon as he leaves school, much as the man who has learnt his German by occasional visits to Berlin and occasional courses of lessons at home avoids like poison any conversation in German with a real native. Let, however, the Englishman learn his German by residence in Berlin for a couple of years, let him *use no English during that time, let him be compelled to get all he wants and learn all he knows through the channel of the German language* for the period I have stated, and he will never again flinch before the face of the native German. So is it with the deaf child. First of all ascertain that he is likely to be a good oral pupil at all, that he has speech or hearing, or, even without these, that he has good eyesight, a free naso-pharynx, and good intelligence; and *unless his attention be distracted by signs, unless he divide his attention between two languages—speech and the finger-language—he will speak, and his speech will be worth having*, if only he and his teacher keep before them the right ideal.

And what is this ideal that must be before the teacher and the deaf child? "This one thing I do." And here I am brought back to Helen Keller. When about 10 years old, and when she had been three years under tuition, Helen was seized with the determination to speak. "I must speak," she said. At first she was discouraged by her teacher, Miss Sullivan, who considered inability to lip-read an insurmountable obstacle; but ultimately Miss Sullivan became as enthusiastic as her pupil over the latter's progress, and carried out the work started by Miss Fuller—who gave Helen her first lessons—with great ability. When I asked Miss Keller lately what effect the acquisition of speech had on her, she replied—"It made me think three times more quickly." The question seemed to be new to Miss Keller and the answer unexpected by Miss Sullivan, but the statement probably means *that the acquisition by the deaf child of articulate speech makes for accurate and rapid thinking*. Here is Miss Keller's description of her earliest efforts:—"I was eager to imitate every motion, and in an hour had learnt six elements of speech—M, P, A, S, T, I. Miss Fuller gave me eleven lessons in all. I shall never forget the surprise and delight I felt when I uttered my first connected sentence—'It is warm.' True, they were broken and stammering syllables, but they were human speech. My soul, conscious of new strength, came out of bondage, and was reaching through these broken syllables to all knowledge and faith."

It is from this bondage into this world of knowledge and faith that the teacher of the deaf child is to bring him, and whilst I know that every deaf child is not an Helen Keller, *I believe that the determination and perseverance which made for success in Helen's case can, in great measure, be brought into operation by every teacher and by most deaf children, and that the result will be satisfactory speech.*

But if it be imperative on those of us who would manage the deaf to examine the children carefully, to classify them scientifically, and to restore as many of them as possible to contact and communication with the hearing world by the teaching of speech and lip-reading, it is equally imperative that we do not waste our efforts on the teaching of speech to defective deaf-mutes. To the 15 per cent of defectives in the Glasgow school, and to the London children collected in the Homerton school, the acquisition of speech is practically impossible. They should be separated, as they are in London, from the orally taught deaf, and taught by methods fitted to their capacities. Their

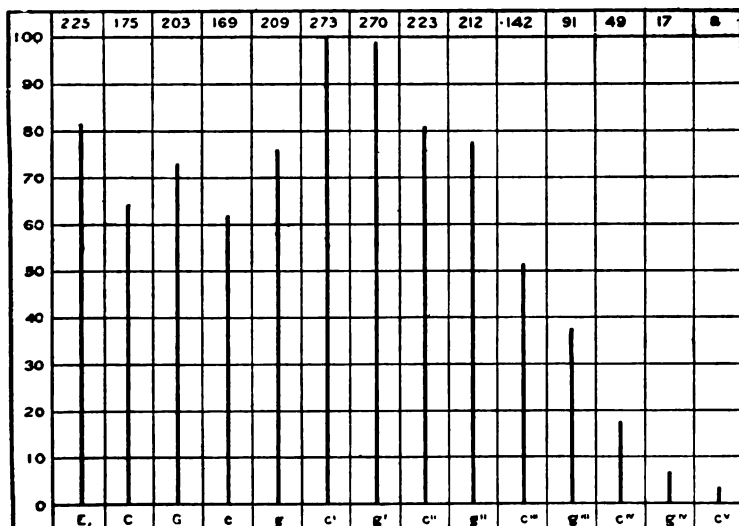


FIG. 5.

HEARING PERIOD IN SECONDS OF THE UNLOADED FORKS OF THE CONTINUOUS TONE SERIES
(after Bezold).

The actual hearing period is represented by the figures at the head of each column. The percentage of each fork (taking the fork c' as 100) is shown by the vertical figures. Unless there be 10 per cent of the hearing left for the forks c' g'' (the pitch of the speaking voice), the residual hearing will be of little use in teaching.

presence amongst oral pupils is damaging to the latter and of no use to themselves.

But these two classes, the defective deaf on the one hand and the semi-deaf and semi-mute on the other, account for less than half of the deaf and dumb—about 40 per cent of the whole. How are the remaining 60 per cent—what has been called the average deaf-mute, the deaf-mute of fair or bright intelligence, with no recollection of speech, and no appreciation of spoken vowels, words, or sentences—to be taught? My answer is, in as many cases as possible, by the

oral method ; but in many cases the latter will fail, or be laid aside afterwards by the pupil. *The degrees of success and the number of successes will depend on the amount of money spent on the work, on the time spent in school, on the ingenuity and determination of the teacher, and on the environment which encompasses the child after he leaves school.* The after-care committee of the London County Council is good, the twelve years' course in school of the American schools is better. In any case let us be done with this unscientific management of deaf children. If this work is worth doing at all it is worth doing well—worth doing well for the child's sake, worth doing as best the teacher can, and worth doing well for the sake of the State which must bear in one way or another the burden of the deaf child.

There are many questions which suggest themselves in connection with this enquiry which cannot be taken up here, but about which information has been forced upon the writer. He only mentions some of them here in the hope that the reader may be encouraged to think of them, viz., the extent to which speech and lip-reading are used by the adult deaf, the relative values of day schools and residential institutions, when the school course for the deaf should begin, the size and outfit of the institutions for deaf children, the prevention of congenital and acquired deafness, &c.

The following practical suggestions are put forward in connection with the subject of the enquiry, "The Study of the Deaf Child":—

1. All children on admission, or shortly thereafter, to a deaf school, should have their ears examined and their hearing tested by an aural surgeon. Voice tests are the most important, but fork tests, limited to the speech area of the scale, should also be used. The fork tests used in this enquiry are of great scientific interest, but are much too elaborate for routine work.

2. The eyes of all children should be similarly examined by an eye surgeon, and, where refraction errors are discovered, these should be corrected by the fitting of suitable spectacles.¹

3. The naso-pharynx of deaf children should be examined, and, in oral pupils at least, enlarged tonsils and post-nasal adenoid growths should be removed where those are well marked.

4. As a result of the above examinations, and of the teachers' experience for a year or so, deaf children should be classified into those who should be taught orally and those who should not, and these two classes should be taught in separate schools quite unconnected with one another.

¹ At the suggestion of the writer, the directors of the Glasgow Institution have appointed an eye surgeon for this work.

THE TREATMENT OF NEURASTHENIA.¹

By W. F. SOMERVILLE, M.A., B.Sc., M.D.

WHILE treating neurasthenia it is important to recognise that the disease is one whose manifestations vary widely both in character and in degree. On investigation it may be found that the development of the disease has been brought about, or aggravated, by an unsatisfactory family history, or by conditions in the past history of the individual that are definitely injurious to health. Frequently an error in judgment is made by the medical attendant, who considers, and perhaps states to the patient, that the manifestations are due only to "nerves," and that these may be overcome simply by an exercise of will. There is a time when lecturing or exhorting to personal effort is indicated, but at the early stages to give advice of this kind is simply to produce from the patient the reply, "I cannot help it."

Let us consider some of the causes of neurasthenia. On enquiry it will be found that frequently the patient belongs to a family possessing neurotic tendencies. The father may be of an irritable nature, or a heavy smoker or drinker. He may have some nervous peculiarity of feature, action, or speech. The mother may be, on the contrary, of a lethargic disposition, sleepless, troubled with neuralgia or a neurotic asthma, fussy and interfering. The brothers and sisters may show signs of overgrowth or undergrowth, and some of them may possess peculiarities similar to those of the patient. All the members of the family may belong to the highly intellectual type, where little or no care has been given to physical development, but where attention has chiefly been paid to learned pursuits and great mental activity.

Neurasthenia attacks women more frequently than men, and we find among mothers of families such causes as frequent pregnancies, domestic worries, family bereavement and household cares. Whilst dyspepsia of years' duration may sometimes prove a cause, the social requirements demanded of the lady of fashion in the present day are responsible for many cases of neurasthenia. Should the illness show itself in a young lady, its antecedents may be found in such influences as late hours,

¹ Read at a meeting of the Glasgow Medico-Chirurgical Society held on 11th January, 1907.

prolonged nursing of some relative, undue domestic responsibility, or an unfortunate love entanglement; or possibly excessive cigarette smoking may have to bear some part of the blame. In schoolgirls, or other students, there may be a history of mental overstrain, combined with the evil influence of cramming for examinations. Late hours and too little sleep, neglect of fresh air, cold baths, and sufficient outdoor exercise are answerable for many cases of neurasthenia. Many girls, too, refuse to take sufficient nourishment for a lengthened period of time, and conduct like this is bound, sooner or later, to give rise to a condition of anæmia, which will be speedily followed by one or more symptoms indicative of the onset of neurasthenia. Business strain and anxiety, and especially financial worries, insomnia over a period of months, irregularity of meals, hurried partaking of food with imperfect mastication may explain neurasthenia in male adults, and in these circumstances the neurasthenic symptoms often slowly and perhaps insidiously manifest themselves. In growing youths overstudy, late hours, excessive cigarette smoking, and other questionable habits may be noted among the precursors of neurasthenia. All these, and other allied influences, may be recognised in individual cases as responsible for the production of neurasthenia; nor must we forget that all diseases capable of causing nervous depression, such, for example, as enteric fever, influenza, &c., are at times blameworthy in the same direction. Thus, before commencing to treat any case of neurasthenia, it is advisable to determine the cause of the disease in the individual case, and, if possible, to free the patient from the operation of so disastrous an influence.

The victim of neurasthenia reveals symptoms that are definite in character. There is frequently a condition of anæmia, which shows itself in the general appearance and in a deficient amount of urea excreted. Appetite is impaired, headaches are frequent, sleeplessness is a common feature, and, when sleep does occur, it is frequently disturbed by unpleasant dreams. There may be emaciation, general debility, weakness of muscle, feebleness and perhaps irregularity of pulse, palpitation, lassitude, and a feeling of exhaustion especially in the forenoons, inability to walk any distance without great fatigue, difficulty of concentrating the mind on any particular pursuit, loss of memory, and a failure of will power. Sometimes the patient dreads to be alone, and is the victim of morbid fears. Digestion is weak, flatulence common, and constipation is often present. There is coldness of the

extremities, and the liver is sluggish in its functions. By many sufferers an exaggerated view is taken of all their symptoms. They continually refer to their complaints, and are often peevish and querulous. Various pains are complained of in different parts of the body, especially neuralgia of the head and arms. A despondent view is taken of life generally. In some there is a great anxiety to become strong; in others the desire for improved health is absent. Many complain that no one understands the "agony" they are experiencing, and that they are misunderstood, misjudged and wrongly treated. Occasionally a "nerve storm" is experienced. This is ushered in by a feeling of mental depression, with a sensation of weight on the top of the head, accompanied by floods of tears. General trembling follows in some cases, and twitchings of the muscles of the upper part of the body. Patients in this state have a dread of "something going to happen," and fear is depicted on the countenance when anyone enters the room. An attack of this kind is followed by great prostration.

A combination of symptoms like these is somewhat difficult to tackle, yet, in the majority of cases, if wise and judicious treatment be adopted, complete recovery, or, at anyrate, a marked improvement, may be confidently expected.

It is advisable, before commencing treatment, to have a thorough examination made of the urine, so that the exact amount of urea, uric acid, and nitrogen excreted in twenty-four hours may be ascertained, and the ratio of the uric acid to the urea noted. (I am indebted to Dr. Carstairs Douglas for his kindness in making the necessary urinary analyses.) As a rule, the amount of urine passed in twenty-four hours is normal. The abundant and limpid urine of the ordinary hysterical patient is not usually found in the true neurasthenic. In all probability the amount of urea excreted in twenty-four hours will be found deficient. The amount of uric acid varies, and, as a rule, there is an absence of the normal ratio between the amount of uric acid and urea. The blood, also, should be examined microscopically, and, in addition, the percentage of hæmoglobin noted.

It is highly important, nay, I would go the length of asserting that it is imperative in many cases, to remove the patient from his or her usual domestic surroundings, and (as the majority are women) to place her in a "home," or, at anyrate, under professional hands, away from home influences. Simply to send the patient to bed in her own house to rest for two or three months is not sufficient. A mother cannot in her own bedroom escape from the evil influence of domestic cares, which

seem to be borne on the wind into her room. The husband relates to her the difficulties of the day, the children burst into the room and disturb her while at rest, and the housemaid brings word that things are going wrong in the kitchen. Further, when a mother is laid up at home, she cannot remove from her mind the feeling that she has no right to be resting, that she ought to be up and doing, so that the domestic machine may be kept running smoothly. For her there is no rest, except in a stranger's house, where home duties will be out of sight, and, therefore, out of mind.

Similarly, a daughter who is fussed over and sympathised with, cannot be expected to improve till she is placed where she will receive firm yet kind treatment, free from unhealthy sympathy, and where she will be expected to do as she is told. In severe cases of neurasthenia, isolation should be complete. Letters both to and from the patient should be forbidden. I have occasionally seen a simple remark in a letter misunderstood, and cause disturbance for several days; and when even towards the end of the course of treatment I have permitted letters to be received, I have usually had cause to regret my leniency. It is well to promise a mother that in case of sickness at home she will be told, and then permitted to act as she considers advisable. Visitors should be discouraged, nay, at first forbidden, and in many cases even the daily newspapers should be withheld.

On the first day of admission no restriction should be enforced, but on the following day treatment should be gently commenced. While the doctor's influence is calculated to produce good results by infusing confidence through his own personality, the patient has quite as frequently to ascribe part of her recovery to the wise management and tactful treatment of the matron and her nurses in the "home." Everything should be done to encourage the invalid to get well, and no foolish gossip or evil-speaking should be permitted. The under nurses should be forbidden to discuss the patient's symptoms with her. Complaints should be made and personal reports be given only to the doctor or matron. It is of importance that the doctor should see the patient more than once a day, and unaccompanied by the matron. Ladies hesitate to enter a neurasthenic "home" lest they find themselves at the mercy of an unwise matron. When, however, they understand that a doctor is in charge of affairs, and that complaints may be made privately to him, they are more willing to submit to the treatment. I use the term "neurasthenic home" advisedly, for little benefit is likely to occur

when the patient is laid up in a general "nursing home," where surgical cases are also admitted. Notwithstanding all care to prevent the patient knowing what is going on, the odour of chloroform and the sounds connected with after-operation treatment cannot be kept from reaching her bedroom. The "home" should be devoted only to cases requiring rest and quietness. Double doors assist in excluding sounds from within the house, while it is advisable to have the "home" situated in a quiet and healthy locality of the city, where there is plenty of light, fresh air, and, so far as possible, sunshine. Flowers should be supplied to make the bed-room look bright and cheerful.

At first my plan is to keep the patient completely at rest in bed, permitting her to rise simply for the toilet or for treatment. After three weeks she may rise in the evening for a short time, and gradually the time spent in bed is decreased. Later on a drive or a walk is prescribed. Free ventilation of the bedroom is encouraged, and open windows by night and day are advised. The feeding is an important part of the treatment. I am not one of those who advocate stuffing to a degree that is disgusting, but I certainly encourage a large increase in the amount of food partaken; the increase in the dietary, however, should be gradual. By the end of the first week the patient may have for breakfast oatmeal porridge or quaker oats, *café-au-lait* (composed of two-thirds of hot milk and one-third of strong coffee), plenty of bread and butter, fish, eggs, or bacon. Twelve ounces of milk are given at 10 A.M., and a cup of soup, after massage or treatment, at 11:30. Dinner at 1 o'clock is composed of soup, fish or meat, with a variety of vegetables, milk pudding, 12 oz. of milk, and fruit. At afternoon tea there should be plenty of bread and butter and cakes, followed immediately by 12 oz. of milk, and perhaps another tumbler of milk at 4:30. An evening meal at 6, with tea, coffee, or milk, and some light form of food, such as game, fish, sweatbreads, &c., is succeeded by another tumbler of milk. At 9 o'clock soup, milk pudding, or other milk food should be taken. The amount of milk partaken in twenty-four hours should range from 20 to 80 oz. General massage should be commenced the day after admission, and applied at first for a few minutes only. Later on a longer course *per diem* may be given, combined with passive movements. About the third or fourth week a course of medical exercises, with resistance, may be begun. It is important that the patient should not only be made to put on weight, but that she should also become muscularly strong. Further, active exercises on the

part of the patient form a good mental tonic. These exercises not only improve the muscular tone, but encourage circulation, and, as they should always be combined with deep respiratory exercises, the blood becomes better aërated, and is therefore better fitted to carry nourishment to the tissues. These exercises require skilful management, and should be administered to the patient by the doctor himself. The ordinary masseuse frequently does more harm than good.

Of late years I have found electricity, especially in the form of high-frequency currents, a most important adjunct in the treatment of neurasthenia. I know of no better nerve tonic. These currents almost invariably produce refreshing sleep, and, if properly administered, are capable of relieving headache; and both of these symptoms frequently reveal themselves in neurasthenics. Further, high-frequency currents improve digestion, and encourage elimination by the kidneys of waste products. Abundant evidence is also given, when the urine is examined, that the metabolic functions are improved by means of this form of electricity, irrespective of rest and special dieting, and it is almost invariably found that the normal ratio of uric acid to urea is restored. In addition, high-frequency currents increase the activity of the peripheral circulation, and so relieve coldness of the extremities, excessive arterial tension, and congestion of the internal viscera. Instead of high-frequency currents, the static current may be employed, but static electricity is more suitable for purely hysterical cases, while the neurasthenic derives greater benefit from high-frequency currents.

Another method which I have sometimes found of great value in the later stages of treatment is what are called "Morton's waves," which consist of an interrupted, uni-directional current. Nor do I neglect the occasional use of the continuous current, the influence of which is well known, the positive pole being applied to the nape of the neck and the negative to the lower end of the spine. I may perhaps add here that all electrical treatment should be administered, if possible, by the doctor himself, or by the experienced matron, to whom definite instructions are given for the treatment of each case.

It is a good plan to encourage the patient to rest, and even to sleep, after the forenoon treatment, and a "wink" or two may be obtained after dinner. From afternoon tea till bedtime the time is spent in reading, working (without straining the eyes), conversing, or playing cards. From long experience I have found the game of "Patience," with its many variations, a great help. Such a game prevents wearying, and yet avoids

both strain upon the eyes and excessive mental activity. Patients frequently hesitate beforehand to undergo this system of treatment lest they should be bored to death by dulness, yet it is a common verdict during treatment that "there is no time to be dull." What with the good sleep at night, the many feedings, the massage, exercises and electricity, and the forenoon sleep, together with reading, fancy work, and games of cards, the day passes with surprising rapidity.

During the latter stages of treatment it is well to have in view the necessity of placing the patient in such a condition that the change from the life in the "home" to that of her own house may not be very marked. Consequently, as I have said, the patient is permitted during the last two or three weeks to go out walking or driving, to attend concerts, the theatre and church, to go alone into the city shopping, perhaps to meet with one or two friends, or to pay an occasional call.

Finally, I am of opinion that it is unwise to permit the patient to return to her own house directly after she leaves the "home." It will be better to send her first among strangers, where she will have an opportunity of meeting various kinds of people before resuming her ordinary domestic duties.

Medicinal treatment consists mainly in giving suitable remedies when there is anæmia, and care must be taken that during the period of enforced rest constipation is avoided. The compound syrup of the formates has been found of service, and when patients are inclined to be "fidgety" a pine bath, or one of the Nauheim baths of medium strength, has a beneficial influence in quieting the nerves, and so encouraging sleep.

In the treatment of neurasthenic patients it is necessary to appreciate the fact that, while there are symptoms common to all cases, each has its own peculiar and individual character. No uniform details of treatment, therefore, should be adopted, and no hard and fast rules kept. Each patient must be dealt with according to her condition, nature, and requirements. At the best, neurasthenics are a difficult class to treat. Consideration, kindness, and tact must be shown, and wise encouragement and sympathy must be given. Above all, much patience and constant personal attention are needed on the part of the physician and the matron, for only by the adjustment of details to the special requirements of the individual case can success be secured.

NOTE ON A CASE WHERE THE RADICAL MASTOID OPERATION WAS PERFORMED FOR PURULENT OTITIS MEDIA (WHEN SEEN FOR THE FIRST TIME, THE PATIENT HAD A PRIMARY DIPHTHERIA OF THE EXTERNAL AUDITORY CANAL).¹

By JAMES GALBRAITH CONNAL, M.B., F.F.P.S.G.,

Lecturer on Aural Surgery, Anderson's College Medical School; Surgeon, Throat and Nose Department, Central Dispensary; and Assistant Surgeon to the Glasgow Ear, Nose, and Throat Hospital.

THE patient, 12 years of age, was a boy who came to the hospital with a purulent otitis media dating from infancy.

Personal history.—He was always a strong, healthy lad; the only illness he had ever had was an attack of measles four years ago.

In the left ear there was a perforation in the postero-superior segment of the tympanic membrane, and the discharge was slightly offensive in smell.

On the posterior wall of the external auditory canal, and partly on the floor of the canal, there was a whitish membrane with an appearance strongly suggestive of the membrane of diphtheria. A part of this membrane was removed and sent to the Corporation Bacteriological Department, and reported as positive. Swabs were taken from the nose, from the nasopharynx, from the pharynx, and from the larynx, but were reported negative.

The patient looked pale. His temperature was 101·2° F., and the pulse 120. The urine was normal, and free from albumen. Hearing distance—the watch, which should be heard at 40 inches, was only heard on contact.

The ear was syringed twice daily with warm boracic solution, and cotton plugs smeared with carbolised glycerine were inserted into the ear. A fortnight later the swabs from the ear were reported negative.

A period of several weeks elapsed before he could be taken into the hospital. During this time whenever his temperature was taken it was never found to be normal; it ranged from 99·8° to 100·8° F. The diagnosis of ambulatory enteric fever was suggested, but there were no rose spots, no enlargement

¹ Read at a meeting of the Glasgow Medico-Chirurgical Society held on 19th October, 1906.

of the spleen, no diarrhoea, the tongue was clean and moist, and Widal's reaction was negative. (In fact, specimens of blood were submitted for examination on three different occasions—twice before he entered the hospital and once while he was an in-door patient.)

The examination of the heart and lungs showed nothing abnormal.

On account of the subfebrile temperatures, and the slightly fetid purulent discharge from the ear, it was decided to explore the mastoid.

The radical mastoid operation was performed. A carious area was found in the antro-tympanic cavity and floor of the antrum. The mastoid wound was enlarged till healthy bone was found in all directions. The sigmoid sinus was not exposed.

On the second day after operation the temperature rose to 102° F.; pulse, 115. The tongue was covered with thick fur, and the breath was very offensive. Next day the temperature was 103·8° F., and the patient complained of pain in the right elbow and left shoulder. The mastoid wound was dressed, and appeared healthy. He was put on salicylate of sodium. In a few days the temperature became normal, and the pain in the joints gradually subsided.

The after-history was uneventful. The mastoid wound healed quickly, and there is now a dry cavity in the ear:

The points of interest in the case are—

1. The persistent elevation of temperature before operation, and the exacerbation after the mastoid operation, associated with pain in the joints which yielded to salicylate of sodium.

2. The primary diphtheria of the external auditory canal, which is very rare. Of course, diphtheria of the external auditory canal, *secondary* to diphtheria of the nose, or of the naso-pharynx or pharynx, is not so rare, the infection taking place along the Eustachian tube to the middle ear, but *primary* diphtheria of the ear is certainly uncommon.

THROAT DEPARTMENT, GLASGOW ROYAL INFIRMARY.

By JOHN MACINTYRE, M.B., C.M., F.R.S.E., F.R.M.S.,

Surgeon for Diseases of the Nose and Throat, Glasgow Royal Infirmary;
Lecturer on Laryngology, Anderson's College Medical School.

THE accompanying plates represent the new operating room in connection with the Nose and Throat Department of the Glasgow Royal Infirmary. Owing to the reconstruction of



NEW OPERATING ROOM.

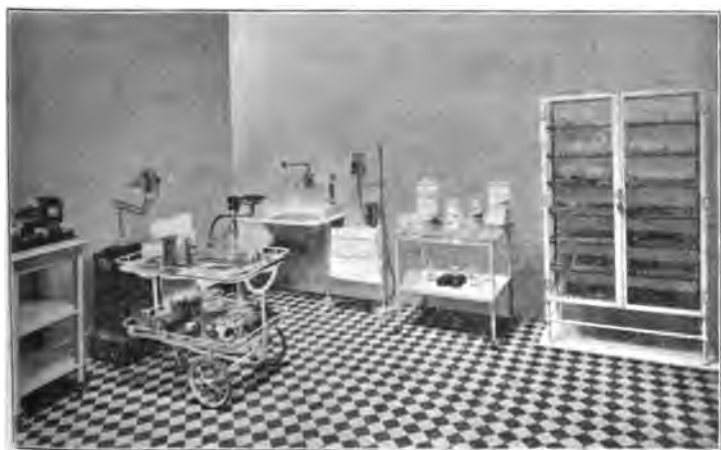
the hospital, all the arrangements have been made with a view to transferring the apparatus to the new building when completed.

Special departments mean great expense in general hospitals, but a complete equipment is indispensable if patients are to obtain full benefit. The whole expense of this equipment has been borne by a well-known generous citizen of Glasgow, who has requested that his name should not be mentioned. Fortunately for us, this is another example of the many kind actions of the citizens, and the managers of the hospital and members of the staff gratefully acknowledge all such help.

With regard to the general fittings, they are largely

electrical. In addition to electric light, electric radiators have been substituted for the steam or ordinary firing arrangements of the present hospital, and sufficiently heavy wires have been laid down to give the current necessary for cautery, motor, and surgical appliances.

No attempt has been made in the arrangements to supply the *x*-rays, Finsen light, or high-frequency currents, because, owing to the excellent special electrical department in the hospital, all cases of lupus, carcinoma, or others requiring such agents can easily be referred to the medical staff in charge of that department. On the other hand, a surgeon nowadays often employs motors for drills or trephines, cautery



THROAT DEPARTMENT, ROYAL INFIRMARY.

points, especially of a large size, while the lighting of small surgical lamps for illuminating the interior cavities of the body is constantly required. To supply the necessary current, a specially large transformer made by Schall, of London, forms part of the equipment, and by this means the various operations above referred to can be easily accomplished without the use of batteries. The transformer has been made of great strength, so as to cover the range of what is required in surgical work.

In using lamps for the transillumination of the antrum of Highmore or frontal sinus, the best results can only be obtained when the room is in complete darkness. By means

of suitable blinds made of material of a specially dense structure the whole light can be excluded, and the results of transillumination are now most satisfactory. Many of the fittings have been supplied by Continental instrument makers, and the operating table, which is of a well-known pattern, has been modified by Fischer, of Freiburg, to suit nose and throat work. By means of levers and other arrangements the patient can be put in any desired position, and a feature of the table is the power to raise and lower the patient, even when lying in a horizontal position, to any desired height, so as to suit the operator.

The surgical part of the equipment includes a liberal supply of all kinds of apparatus required in the routine examination of the nose, throat, and œsophagus, and, of course, the necessary arrangements for the sterilisation of instruments, dressings, &c., have been made. There is also a separate set of instruments for tracheotomy to meet cases of emergency, and complete new outfits have been obtained for operations on the frontal sinus, the antrum of Highmore, deviation of the septum, and other surgical procedures now commonly practised in this department of surgery. Sprays and all requirements for inhalations, lotions, and pigments form part of the arrangements.

A special feature is the set of Killian's instruments for the diagnosis and extraction of foreign bodies in the respiratory and œsophageal tracts. The necessity for this will be recognised when it is pointed out that during last year 91 cases of foreign bodies in the nose, throat, respiratory passages, and œsophagus were received into the throat wards. Ever since the introduction of *x*-rays, and special methods of direct inspection of the respiratory passages, the number of such cases received into the hospital has been steadily increasing.

CURRENT TOPICS.

GLASGOW AND WEST OF SCOTLAND MEDICAL ASSOCIATION ("GLASGOW MEDICAL JOURNAL"): ANNUAL MEETING.—The Annual Meeting of the Association was held in the Faculty Hall, on 25th January, the chair being occupied by Dr. John Rowan. The minutes of the previous meeting were read and approved. An apology for absence was intimated from Dr. R. M. Buchanan. The Treasurer's and Editors' Reports were submitted by Dr. Edington and Dr. Monro respectively. The reports were adopted, and the Treasurer and Editors were thanked for their services.

The following office-bearers were elected for 1907:—

<i>President,</i>		DR. JOHN ROWAN.
<i>Vice-Presidents,</i>		{ DR. WM. G. DUN. DR. L. R. OSWALD.
<i>Editors,</i>		{ DR. THOMAS KIRKPATRICK MONRO. MR. GEORGE HENRY EDINGTON.
<i>Secretary,</i>		{ MR. JAMES GRANT ANDREW, 12 Woodside Terrace.
<i>Treasurer,</i>		{ MR. GEORGE HENRY EDINGTON, 20 Woodside Place.
<i>Auditors,</i>		{ DR. W. B. INGLIS POLLOCK. DR. J. KING PATRICK.

General Business Committee.

DR. ARCH. YOUNG.	DR. R. T. HALLIDAY.
PROF. CHAS. WORKMAN.	DR. ROBT. FULLARTON.
DR. J. WYLLIE NICOL.	DR. H. H. BORLAND.
PROF. ROBERT MUIR.	DR. LEONARD FINDLAY.

THE LATE PRINCIPAL STORY.—By the death of Principal Story, which took place on the 13th of last month, the community of Glasgow has suffered a loss which it will be difficult to estimate. Strangers may think of the deceased as a prominent churchman; but he was far more than that. Whatever else interested him, he kept as his goal the good of his University. Fortunately for her, he was possessed of a wide outlook, and he constantly aimed at keeping her in line with the modern march of events.

The late Principal was a man who never shirked a disagreeable duty; and recognising, shortly after he assumed office,

the clamant need of the Faculties of Medicine and Science for suitable accommodation, he called on the citizens for help. That his cry was not unheeded is shown by the numerous new buildings which have sprung up round the parent structure. Students in those Faculties are not likely to forget the debt they owe to Principal Story. Than the cluster of new laboratories and institutes, what more fitting monument could we have of one who combined dignity of person with usefulness to his fellows?

ROYAL INFIRMARY APPOINTMENTS.—Dr. J. B. M'Kenzie Anderson has been appointed a Visiting Physician in room of Dr. J. Lindsay Steven. Dr. J. King Patrick has been appointed Anæsthetist in room of Dr. A. Laurie Watson, resigned. Dr. Elizabeth T. Fraser has been appointed Extra Assistant Bacteriologist.

VICTORIA INFIRMARY APPOINTMENTS.—Dr. Alex. Fraser has been appointed Extra Dispensary Physician, and Drs. John Graham and James Russell have been appointed Extra Dispensary Surgeons.

SOUTHERN MEDICAL SOCIETY: ANNUAL SUPPER.—The annual supper and smoking concert of the Society was held on Thursday evening, 17th January, in Ferguson & Forrester's Restaurant, Buchanan Street. Dr. T. K. Monro, President, occupied the chair, and was supported by Professor Stockman, Dr. Eben. Duncan, Dr. T. Forrest, and others. The time after supper passed pleasantly with conversation, song, and story. Among the members and guests who contributed to the enjoyment of the evening were Dr. Eben. Duncan, Dr. Chas. E. Robertson, Dr. W. S. Syme, Dr. Reginald Dunlop, Dr. W. A. Burns, and the President.

SCOTTISH POOR-LAW MEDICAL OFFICERS' ASSOCIATION.—The annual meeting of the Association was held in St. Enoch Hotel, Glasgow, on 18th January, under the presidency of Dr. Gilbert Campbell, Partick. The committee's report was unanimously adopted, and the office-bearers were re-elected. The treasurer's statement showed a good credit balance.

The committee, in their report for the year 1906, express gratification at the decreasing number of vacancies advertised in the medical press as a result of their method of contra- advertising. When appointments become vacant, the outgoing medical officer is always applied to for information, and as

this is never refused, the secretary is able to give reliable information to new applicants. In several instances, where Parish Councils intimated a reduction of salary, the medical officers were advised to appeal to the Local Government Board, and this was done with satisfactory results.

The committee are further gratified by the extent to which grievances of the Association have been brought under the notice of Members of Parliament. The chairman and secretary, accompanied by several Members of Parliament, had an interview with the Secretary for Scotland, and were assured of his sympathetic attention to the points submitted.

With regard to the Royal Commission on Poor Law, the committee state that evidence relating to Scotland is expected to be heard in June or July next, and that the chairman and secretary, along with the Scottish Committee of the British Medical Association, have formulated a series of questions (1) relating to the outdoor medical treatment of the sick poor, (2) relating to the indoor medical treatment of the sick poor, and (3) as affecting the general public. Joint action of the inspectors of poor, poor-law medical officers, and governors of poorhouses in Scotland has been taken on other matters which would be brought before the Commission, and they are unanimously of opinion that every poor-law medical officer should become a statutory official, only dismissable by or with the consent of the Local Government Board, as recommended by the Departmental Committee of the Local Government Board; and that Scottish poor-law officials should be granted superannuation on similar lines to the Poor-Law Superannuation Act in England.

NEW PREPARATIONS, &c.

THE following have been received from Messrs. Parke, Davis & Co., London:—

1. *Adrenalin and Eucaine Hypodermic Tablets*.—Each tablet contains adrenalin, gr. $\frac{1}{2000}$; eucaine lactate, gr. $\frac{1}{6}$; and sodium chloride, gr. $\frac{3}{4}$.

2. *Elixir Heroin and Terpin Hydrate*.—This agreeable preparation is intended to combine the sedative properties of heroin with the stimulating action of terpin hydrate. It may be used in bronchitis and other respiratory diseases.

MEETINGS OF SOCIETIES.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.

SESSION 1905-1906.

MEETING II (*continued*).—19TH OCTOBER, 1906.

The President, DR. JOHN LINDSAY STEVEN, *in the Chair*.

V.—DEMONSTRATION OF SPIROCHÆTES FROM SYPHILIS, YAWS, AND GRANULOMA PUDENDI, WITH REMARKS UPON THE PROTOPLASMIC BODIES IN SYPHILITIC MATERIAL.

BY DR. ALEX. MACLENNAN.

The probability of the spirochæte pallida having an etiological bearing upon syphilis has been recently strengthened by the observation¹ of the agglutinating power, albeit feeble, of the serum from an eight months' syphilitic upon this spirochæte, and also in the stilling of its movements—phenomena which are not exhibited in the case of healthy serum. The finding histologically of this organism in the tissues, especially in congenital manifestations, lends further support to this probability. Moreover, where the lesions in the foetus are most evident, there the spirochætes are found in greatest numbers. In cases where the dead foetus has been retained in utero till maceration has far advanced the spirochæte pallida has been found in vast numbers. It is also found upon the surface of congenitally affected infants, apart from any local lesion. The liver, as might be expected, is the organ where the spirochætes are found in greatest numbers, but they are also observed throughout the whole body. I have found in smears from a congenital rash numerous examples of the spirochæte pallida, along with the smallest bodies (described by me in a recent article² in the *British Medical Journal*), some of which were shown before

¹ Provaczek, cited by Hoffman, "Mitteilungen und Demonstrationen über experimentelle Syphilis, Spirochæte pallida und andere Spirochætenarten: Vereinigung für Mikrobiologie, Berlin," *Münch. med. Woch.*, 1906, No. 35, S. 1736.

² MacLennan, "On the Spirochæta pallida and its Variations," *British Medical Journal*, May, 1906.

this Society last session. After an interval of three days, during which the rash had manifestly increased, a prolonged search through eight films, prepared and stained in the same way as formerly, revealed only a few stray spirochætes, though the smaller bodies were even more numerous. I have failed to detect the presence of spirochætes in sections of a piece of skin involved by this rash; also from a primary sore, and from a lymphatic gland.

The silver method of Levaditi is, like all silver methods, somewhat erratic, and I have been unable to obtain any successful results with it during the short time at my disposal. It has been pointed out¹ that elastic fibres in the tissues are very difficult to differentiate from spirochætes, and as the section must be of the thinnest and the staining of the deepest this difficulty is very real. Such spirochæte-like filaments were observed in non-syphilitic preparations (carcinoma, &c.). These were considered to be produced from elastic fibres and from nerve filaments.

A vast amount of work has been, and is being, carried out in this direction, and it seems definitely settled that the organisms are even more plentiful in the deeper structures. This point I want to emphasise. The spirochæte pallida is found in greater numbers in the tissues, especially in the congenital varieties, than on the actual surface. Hitherto the congenital variety has been considered less virulently infective. The few reported cases where infection has been alleged are received somewhat sceptically, and if spirochæte pallida be the infective agent this scepticism would not be warranted.

Syphilis undoubtedly, however, is spread not by contact with the discharge from the congenital manifestations (where the spirochætes are plentiful), but by the discharges from the acquired manifestations. Such surface discharges admittedly contain usually few examples of the spirochæte pallida, and it is not necessary to tap the deeper strata of any lesion before transmitting the infection. It is in this highly contagious material that the infective agent ought to be found in greatest numbers. The organism, therefore, must be in hordes in the immediate surface discharge, and this cannot be stated to be the case with regard to the spirochæte pallida. The bodies found in such discharge are very diverse, but it is among these that the real infective agent must be looked for. Take, for instance, such a case as the following:—

¹ Schultze, "Die Silberspirochæte," *Berlin. klin. Woch.*, No. 37, 1906; Friedenthal, "Ueber Spirochætenbefunde bei Karzinom und Syphilis," *ibid.*

A man presented himself at my clinique at the Western Infirmary with a gonorrhœal orchitis. On examination, a very minute erosion, of which he was unaware, was found on the frænum of the prepuce. The inguinal glands were slightly enlarged. Examination of the serum expressed from this sore showed only gonococci and small tailless protoplasmic bodies, but no spirochætes. As the case was reckoned to be one of early syphilis, and, I take it, even then capable of transmitting the disease, the man was put upon antisyphilitic treatment. Two weeks later the films prepared from the still minute lesion showed the spirochæte pallida in considerable numbers.

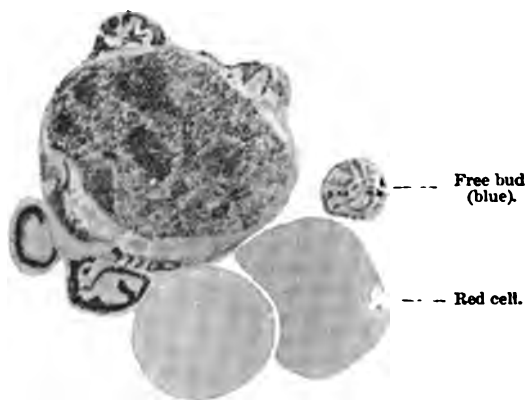


FIG. 1.

Mononuclear cell from syphilitic gland stained by Giemsa's stain. Nucleus purple, protoplasm blue. Shows formation of protoplasmic buds.

From this case some of the most instructive specimens were prepared.

The spirochætes varied in numbers, and even before the sore actually healed they were entirely absent from the films, yet again I venture to think the infectivity of the sore did not vary. The secondaries came out in due course, but were not very severe. Now, within a year, this man, while still under treatment, is showing a scanty rupioid eruption on the shoulders and a node on the tibia. Spirochætes were not found in films prepared from the serum expressed from this eruption. Here, then, was a sore one might suppose to be wellnigh purely syphilitic. The first bodies found were the precursors of the pallida, and the subsequent appearances of the pallida show the relationship between the two. In this

case the spirochætes were found in the urine and in the rash. The juice from the glands showed numerous variously-shaped protoplasmic bodies.

One difficulty in this investigation is to settle which among so many forms are normal either in the blood or in the pus. I have found in smears prepared from all enlarged glands—syphilitic (congenital and acquired), septic and tubercular alike—that the tissue cells tend to give off buds of protoplasm. These buds begin as slight projections from the margin of the cell. There the protoplasm is seen to show a collection of larger and more deeply stained particles (Fig. 1). As the bud develops, these granules gradually arrange themselves round the periphery. It is conceivable that by this means



FIG. 2.

Multinuclear cell (pus) from primary sore. Stained thionin, Giemsa, gentian, violet. Containing clear bodies.

the cell rids itself of effete products. Syphilitic protoplasmic bodies must therefore be distinguished from such buds coming from the connective tissue or pus cells, from blood plates, and from protoplasmic granules in the serum. In pus, nuclear and protoplasmic particles from the broken-down cell are apt to interfere with the appearances, though actual buds are less likely to be present. The syphilitic bodies are usually less darkly stained, and when contained within the cell appear as vacuoles (Fig. 2). In the red cells these bodies are very evident (and less open to criticism). It may here be remarked that such appearances of parasites in the red cells vitiate all attempts to eradicate the disease by treatment, however drastic, of the primary lesion, as the infection has by that time entered the blood-stream. In all films stained for many

hours another source of trouble is the formation of the artefact, the aërial contamination with subsequent growth of various fungi, yeasts, &c., and the deposition of stain. The time required and the eye-strain involved by prolonged search

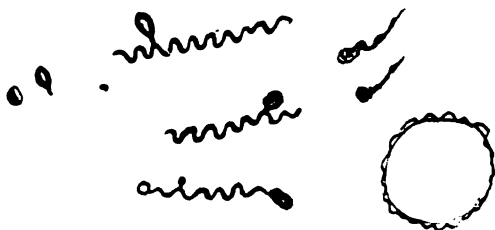


FIG. 3.

Types of spirochaetes found in yaws with small bodies attached, as in the spirochaete pallida. The same bodies are to be seen in countless numbers free in the field. Some of these are talled as are the similar bodies found in syphilis. A shrunken red cell is outlined for comparison. The smaller bodies are the infective agents, as are the corresponding ones in syphilis.

of the films under a high power add greatly to the difficulties. Till, however, the spirochaetes are cultivated, little further advance may be expected. Since the publication of my article, other observers have described the same appearances, notably

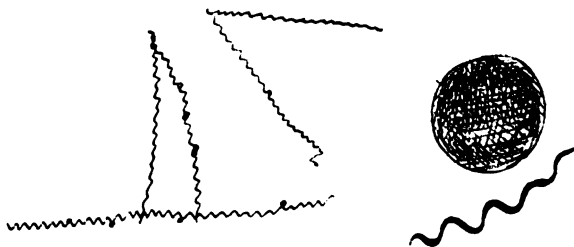


FIG. 4.

Spirochaetes found in granuloma pudendi. These have very minute waves. They have also small bodies attached, and the same are to be found free in field. Their small size prohibits the same definite description as those occurring in yaws and syphilis. A red cell and a spirochaete of the refringens type.

is this the case in the article published by Mühlman¹ (epitomised in the *Münchener medizinische Wochenschrift*), who is of opinion that these protoplastic organisms are not identical

¹ Mühlman, "Ueber Syphilisbakterien (Russky Wratsch)," *Münch. med. Woch.*, No. 37, 1906.

with the cytorrhcytes luis (Siegel). I am indebted to Dr. Branch, of St. Vincent, West Indies, who has kindly provided me with fixed smears from recurrent yaws and granuloma pudendi. I have stained them in a number of ways. Those from yaws are practically identical with the spirochæte pallida (Fig. 3), those from granuloma pudendi (Fig. 4) are manifestly different in many respects. The common refringens type were also noted in this specimen.

The following specimens were shown under one-twelfth inch oil objective :—

1. Tailed protoplasmic bodies from a gland.
2. Protoplasmic bodies in a pus cell.
3. Protoplasmic bodies in pus cell and free in neighbourhood.
4. Protoplasmic bodies in red cells, free, and spirochæte pallida.
5. Spirochæte pallida and smaller bodies.
6. Spirochæte pallida dividing.
7. Spirochæte pallida and refringens for comparison.
8. Spirochæte refringens (sporing) and free protoplasmic bodies.
9. Spirochæte from healthy mouth.
10. Spirochæte from yaws.
11. Spirochæte from granuloma pudendi.
1. Spirochæte from primary sore under one-sixth inch objective.
2. Cell from secondary gland to show formation of buds under one-sixth inch objective.

The *President* complimented Dr. MacLennan on his excellent demonstration, and on the great modesty with which his views had been expressed. He was much interested in the arguments advanced in favour of the view that the spirochæte had not yet been proved to be the specific cause of syphilis.

Dr. MacLennan replied.

VI.—ON THE NEED FOR A PROGRESSIVE STUDY OF INDUSTRIAL DISEASES.

BY DR. J. W. ALLAN.

Dr. Allan's paper will be found as an original article at p. 97.

Dr. Alex. Scott referred to his paper on the "Supervision

of Workers in Dangerous Trades." With regard to the prevention of anthrax, the practical difficulty which presented itself was that of killing the bacillus without injuring the wool. He thought it a mistake to speak of external and internal anthrax. Internal lesions were found in all cases. He referred to a case where the carter who removed the bale, the woolcarder, and a girl in a furniture warehouse, where the wool had been taken, all took anthrax, and died in two or three days. With regard to cases of lead-poisoning from carding wool, after the establishment of free ventilation there were no cases for seventeen months. Generally when cases did occur, it was found due to non-co-operation on the part of the workers with the existing regulations. Constant medical supervision was necessary.

The *President* said that the subject was now receiving sufficient attention by lecturers in public health for the needs of the general practitioner. In the factory districts it was a special study. If all such specialties were to be taken into the medical curriculum (already a very heavy course), it would soon become a ten years' instead of a five years' period of study.

Dr. Allun replied.

OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

SESSION 1905-1906.

MEETING IV.—24TH JANUARY, 1906.

The President, DR. J. K. KELLY, in the Chair.

I.—SPECIMENS.

A. BY DR. ROBERT JARDINE.

1. Ruptured uterus showing laceration through the lower uterine segment.
2. Cancer of the cervix involving the posterior lip.

B. BY DR. J. NIGEL STARK.

1. Calculus removed by operation from the neighbourhood of the urethra, but not connected with it.
2. Pyosalpinx.

C. BY DR. E. J. PRIMROSE.

Anencephalus fœtus.—Born in the seventh month on 3rd January. Presenting foot, hand, and head at delivery. Placenta degenerated over a small area.

Special feature of interest in the case was that the posterior wall of the *uterus was myomatous* and roughly felt about the size of a large lemon.

At the last confinement, three years ago, the placenta was adherent and removed by hand. Menstruation thereafter became irregular at five and six weeks' intervals. From the middle of May till 4th June last there was constant hæmorrhage and none since till this confinement.

Present puerperium uneventful; placenta easily expressed. Myomatous wall of uterus has come down in size very considerably.

D. BY DR. D. DUFF.

Placenta from placenta prævia.

E. BY DR. J. K. KELLY.

Sarcoma of the uterus from a case in which Cæsarean section was performed.

II.—TWO CASES OF PURPURA HÆMORRHAGICA NEONATORUM.

BY DR. ALEX. ALLAN.

It is a matter of common knowledge that spontaneous hæmorrhages occurring during the early years of life are not uncommon. These hæmorrhages may arise from mucous tracts, such as nose, mouth, or gastro-intestinal tract, or skin ecchymoses from trivial traumata, or even hæmorrhagic effusions into internal organs.

No definite classification of the actual or contributing causes of these hæmorrhages has been made as yet, and the subject is still somewhat obscure, but the general opinion is that they are often symptomatic of specific diseases, such as syphilis, &c. Ashby¹ strongly emphasises this view of their causation.

It must be remembered also that slight hæmorrhages from mucous tracts in earlier life, such as "bleeding from the nose," are quite consistent with a fairly high standard of general health, and may be looked upon as practically physiological.

¹ *Diseases of Children*.

Townsend¹ corroborates the general opinion expressed regarding these spontaneous hæmorrhages (viz., their symptomatic nature), but after a series of observations emphasises the propriety of making a clear distinction between a special form of hæmorrhage, not associated with any known specific process, occurring during the first few days or weeks of life, and in which escape of blood from the small blood-vessels is the chief or essential symptom, on the one hand, and the later, what we might call symptomatic, hæmorrhages and the hæmophilic diathesis on the other. He bases his conclusions on the uniformity of symptoms which characterise the course and the general distribution of this special form of hæmorrhage, and which distinguishes it as a separate clinical condition, essentially different from the generally recognised symptomatic hæmorrhages of early life, and also hæmophilia. This form he proposes to name "hæmorrhagic disease of the newborn."

Rotch,² after a study of the literature and a review of Townsend's cases, considers we are warranted in making the following general conclusion that "the disease is one of a general nature, and infectious," for the following reasons:—(1) It occurs more frequently in hospitals than in private practice (in this connection due allowance must be made for the fact that facilities for observation and study of cases are much greater in hospitals than in private practice, and also, cases occurring in these institutions are more likely to be recorded); (2) its acute onset; (3) its self-limited course; (4) the almost invariable elevation of temperature during the acute stage, and its fall on recovery or on cessation of hæmorrhage. He thus brings this form of disease into line with the main features of the other acute infectious disorders.

Holt³ agrees with views expressed above, but is averse to placing much importance on elevation of temperature, as fluctuations due to nutritional causes are frequent in the first few days of life.

The following are the notes of two cases occurring in the late autumn of last year, in the practice of Dr. J. M. Ramsay and myself, which we considered belonged to this special form named "hæmorrhagica neonatorum."

CASE I.—Mrs. R., a healthy-looking primipara, was delivered of a male child on 30th September, 1905. Labour was somewhat protracted, owing to the presentation being a right

¹ *Archives of Pediatrics*, 1894, vol. ii.

² *Text-book of Pediatrics*.

³ *Diseases of Infancy and Childhood*.

occipito-posterior, but otherwise was without event. The child was plump and healthy-looking, and weighed $8\frac{1}{2}$ lb. It breathed freely and cried lustily immediately after birth, and "took the breast" readily two hours later.

On 2nd October, within forty-eight hours of the birth, I was hastily summoned about 4 A.M. to see the child. The nurse's story was to the effect that the child had become restless and fretful, refusing the breast, and appeared to suffer from colicky pains, and had passed a large quantity of blood by the bowel. Two or three napkins were shown me, soaked with blood and mixed with meconium. The blood was very dark, almost tarry, and was free from clots, evidently having been shed from high up in the intestinal canal. There was no hæmatemesis or vomiting of any kind. The facial appearance had changed markedly from the previous day, and there was a greyish pallor present. The restlessness and abdominal pains at intervals still continued, and, in addition, the child refused all nourishment. Pulse and respiration were both increased, and there was a considerable elevation of temperature, the pulse ranging from 120 to 126 per minute, and the temperature 102.8° F. There were no signs of any rash or patches of ecchymosis at this time. At 10 A.M. I again saw the child, and found the general condition was much worse. Large patches of ecchymosis were present in the umbilical region, and over the upper parts of both tibiæ in front. The temperature was 101.6° F., and the pulse varied between 128 and 130 per minute. The restlessness and fretfulness of the child had increased, the face was pinched, the eyes were sunken and black crescents had appeared under the lower lids, and the anterior fontanelle was depressed. The bowels had moved twice in the interval, and the dejectæ were tarry-looking, but the napkin round the mass showed a pinkish tinge. I saw the child again at 2 P.M. and at 6 P.M. The only new features to be recorded were the appearance of fresh patches of ecchymosis about the anterior axillary folds and the inner surfaces of the thighs, with some purpuric spots over the front and sides of the chest and abdomen. The pulse was barely perceptible, and the thermometer would not rise above 95° F. The bowels had not moved again. The child died shortly afterwards.

In view of theories of causation, it remains to be noted that there were no signs of any septic or inflammatory condition about the umbilicus. No marked jaundice, no cyanosis, and no signs of paralysis were observed. Some urine was obtained, but this presented no abnormalities, and the reaction for blood

in particular was negative. The child had suckled freely and rested well till the onset of this illness, and had appeared in every way healthy.

The father denied having had any venereal disease or having exposed himself to the risk of infection. There was no history with either parent of rash, sore throat, or falling out of hair, and no history of previous abortion or miscarriage with mother. Further, there was no history of either hæmophilia or rheumatism.

CASE II.—Mrs. H., iv-para. Confined on 7th October, 1905, one week later than Mrs. R. She was in charge of a midwife, who diagnosed a breech presentation, and sent for assistance. The labour terminated uneventfully, and the child was well-nourished and healthy.

Three days later (10th October), a message was sent in the morning stating that the child had passed blood by the bowel, and, in addition, had vomited blood twice during the early hours of morning. Examination showed the presence of blood mixed with meconium on the napkins, but evidently in smaller quantity than in the previous case. The gums were soft, and there was a thin, blood-stained, watery fluid dribbling from the corners of the mouth. It appears the child had had 1 drachm of ol. ricini the night previously, and had become restless and fretful, refusing to suckle, and apparently suffering from abdominal pains afterwards.

There were some irregular but well-marked purpuric spots on the buttocks and lower limbs, one large patch of ecchymosis over the anterior surface of the right shoulder, and a smaller patch over the left breast. There was oozing of blood from the umbilicus, apparently capillary in nature, but only to a slight extent. The pulse-rate varied from 130 to 134 per minute; the temperature was 102.4° F.; the breathing was rather irregular, but did not exceed 24 per minute. The child was fretful and restless and would not suckle, but, so far as facial appearances went, did not seem particularly ill. The urine did not stain the napkins. About 5 P.M. the child had a convulsive seizure in which it died.

As in the previous case there was no evidence of parental syphilis; the three elder children were alive and healthy, and there had not been any intervening abortions or miscarriages. There was no hæmophilic or rheumatic history. No jaundice or cyanosis was noted, and there was no evidence of any septic mischief about the umbilicus.

Post-mortem examination was refused in both cases, and

I also regret I was unable to make a complete blood examination.

The similarity of the above cases is very striking so far as clinical history goes. The same prodromal symptoms of restlessness, fretfulness, and refusal of nourishment were present in both, followed by melæna and the appearance of patches of ecchymoses over the trunk and lower limbs, associated with elevation of temperature, and progressing rapidly to the same fatal issue.

It is true additional symptoms were present in the second case, in the omphalorrhagia, hæmatemesis, and the onset of a convulsive seizure, but these mark, not a different disease, but probably a more virulent infection.

It is also important to note that in both there was absence of any syphilitic, rheumatic, or hæmophilic history, and also absence of any evidence of gross septic or inflammatory mischief about the cord.

At this point, perhaps, I may remind you of the main features of "*hæmorrhagica neonatorum*," and mention some points in the differential diagnosis.

As indicated above, it is only in recent years that any attempt has been made to classify or arrange the various disorders of early life characterised by hæmorrhages of one form or other, and most authors have been content to group them indiscriminately together. The extreme rarity of this particular form of disease, the obstacles in the way of having efficient skilled observation of the cases and histological examination of the tissues or blood tend to make advance in knowledge very slow, but sufficient has been done to warrant the subjoined facts as being in the main typical.

The distinguishing features are briefly as follows:—The hæmorrhages in "*hæmorrhagica neonatorum*" are not associated with any known specific process, the bleeding is from the small blood-vessels, is spontaneous in origin, has no known connection with delivery, is multiple in location, and, while little influenced by treatment, tends to cease in a limited time.

Etiology.—The predisposing causes are similar to those which determine the occurrence of bleeding in the traumatic or other hæmorrhages of early life, viz., (1) the fragile condition of the blood-vessels themselves, (2) the profound changes in the circulation, and (3) alterations in the blood itself in the newly-born.

Taylor on "The Teaching of Temperance," and by Dr. Wm. C. Sullivan on "The Criminology of Alcoholism."

In conclusion, after reading through *The Drink Problem* with great care, we testify with pleasure that it is a suggestive and informative book on a subject of paramount importance to professional man and layman alike, and to both we heartily commend it for their studious perusal. A word of praise is due to the publishers for the elegant appearance of the volume.

Text-Book of Anatomy. Edited by D. J. CUNNINGHAM, F.R.S.
Second Edition. Edinburgh and London: Young J. Pentland. 1906.

WE congratulate the editor and his collaborateurs on the appearance of the second edition of this elaborate work. When reviewing the first edition we gave expression to some doubt as the wisdom of introducing a new work of so large dimensions, but the early demand for a second edition shows that its encyclopædic character is no bar to its appreciation at the hands of the student. There are no notable alterations in the form or subject of the new edition. Many new illustrations appear, which, with the addition of colour washes to those already presented in the sections dealing with joints and muscles, make this feature of the work still more attractive and complete.

The Cause and Prevention of Dental Caries. By J. SIM WALLACE, M.D., D.Sc. London: Baillière, Tindall & Cox. 1906.

THIS book forms a fitting sequel to those already published by Dr. Wallace. It consists of various papers or essays which have been lately separately published. The more recent scientific work done in relation to dental caries by various workers is gone into, and while the criticism is usually hostile, the author makes out a remarkably strong case in favour of the views he holds. Like his other publications, this book should be read more especially by the general practitioner who mainly directs the feeding of young children. One statement he makes, which is substantially correct, should be of more than passing interest to the medical man, viz., that the teeth of doctors' children are usually worse than the average, and that the reason is that medical men are the greatest advocates of pap-feeding.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

M E D I C I N E.

Experimental Studies of Cardiac Murmurs (*Amer. Journal of Med. Sciences*, February, 1907).—Thayer and MacCallum have, during the past year, made a series of observations on the cardiac sounds, with especial reference to the transmission of murmurs in the dog's heart.

Aortic or pulmonic stenosis was easily produced by a cord surrounding the vessel just above the valves. This resulted in a characteristic thrill and rough murmur, transmitted upwards just as in man. Murmurs in the pulmonary artery were produced with striking ease, very slight pressure over the conus arteriosus, or over the artery, causing a systolic thrill and murmur immediately beyond the point of pressure. This suggests that a similar process may account for some of the frequent basic pulmonary murmurs which are heard in man.

In eight cases in which aortic regurgitation was produced, the murmur was exactly similar to that heard in the human heart. Especially interesting was the production of a functional aortic insufficiency from dilatation of the left ventricle, an observation strongly supporting the view that the muscle of the left ventricle plays an important part in the closure of the aortic ring.

An attempt was made to bring about mitral stenosis by applying a clamp in the position of the mitral ring. The tightening of the clamp caused great distention of the left auricle, and immediate increase in the intensity of the second pulmonic sound, with corresponding enfeeblement of the aortic. In one experiment it was possible, at a certain point of rather moderate tightening of the clamp, to hear a slight presystolic murmur, best heard midway between the clamp and the apex. This disappeared with further tightening or relaxation of the clamp. The first sound became duller and more humming, unlike that in characteristic mitral stenosis.

In six cases mitral insufficiency was produced, giving rise to a murmur, resembling closely the analogous murmur in man. The murmur, however, was most intense, and associated with a marked thrill, over the left auricle just beyond the valves. Thayer lays considerable stress on this observation, and says that, in man, the murmur of mitral insufficiency is doubtless loudest at the mitral ring, and just beyond this point in the left auricle, and that there is probably also a well-marked thrill, but the deep position of the left auricle and the mitral ring render these conditions undemonstrable, the murmur being audible at the apex alone, because this is the only point at which it is possible to approach the left auricle.

In one experiment a gallop rhythm was produced, and it was found that the third sound was synchronous with the dilatation of the ventricle, which occurred "abruptly with a distinct shock, having altogether the appearance of an active muscular process." This sound has a precisely similar character to the sound in the gallop rhythm heard in nephritis, dilated heart, adherent pericardium, &c., and was clearly analogous in time to the so-called "opening snap" heard in mitral stenosis, and ascribed to the sudden tension of the thickened mitral valves with the beginning of diastole.

The effect of changes in the heart's action on the sounds at the arterial orifice was studied in four cases. It was found that aortic systolic murmurs were especially frequent after bleeding followed by infusion, in association with what appeared to be rather abrupt action of the ventricle and rather large

Age.—It occurs in very early life. In the analysis of Townsend's cases it was found that the onset of the disease was practically always in the first week after birth, and usually on the second or third day, the order of frequency being third, second, fourth, and first day of life. The tendency to bleed does not extend beyond a few weeks.

Sex.—It occurs most frequently in females, in the ratio of three females to two males. In hæmophilia, on the other hand, the ratio of incidence is thirteen males to one female.

It is regarded as infectious in nature on account of, as stated above, (1) its acute onset, (2) its self-limited course, (3) the febrile temperature, (4) its ending in recovery or death, (5) its comparative frequency in hospital practice.¹ The statistics of Boston Lying-in Hospital show a difference between the out- and in-patient departments of 0·47 per cent. The actual figures out of a series of 7,000 cases were—out-patients, 0·10 per cent; in-patients, 0·57 per cent. Ritter² shows an incidence of 1·4 per cent in the Lying-in Asylum at Prague, and Epstein³ 8 per cent in the Foundling Asylum. Gærtner⁴ found in two cases a short bacillus, resembling bacillus coli communis in some respects, which caused a similar disease in newborn dogs on injection. Holt reports a similar bacillus in cultures taken from the umbilical arteries, heart, and spleen of a child eight hours after death. Various other forms of pathogenic organisms have been found, so the bacterial causation is not yet settled.

From the point of view of comparative anatomy it is worthy of note that there is a well-recognised disease of newly-born domestic animals, characterised by spontaneous, multiple sub-cutaneous, and other hæmorrhagic effusions, which becomes at times epidemic in districts. This disease occurs in the first few weeks of life, is of a very fatal type, and is generally supposed by veterinary pathologists to be due to infection by the umbilicus.

Symptoms.—Restlessness, fretfulness, refusal of breast, and colicky pains are usually present. The facial appearance of

¹ *Archives of Pediatrics*, vol. ii, 1894.

² *Diseases of Infancy and Childhood* (Holt).

³ *Loc. cit.*

⁴ *Loc. cit.*

the child changes very markedly, as was strikingly apparent in the first of the two cases noted above. Pallor of a greyish-yellow hue is early manifested, and is probably due to loss of blood. The face is pinched. The eyes become sunken, with black crescents under the lower lids, and the anterior fontanelle is depressed. The general condition is one of prostration.

These prodromal symptoms are followed by the appearance of purpuric spots or patches of ecchymosis *pari passu* with the onset of hæmorrhages from mucous tracts, such as stomach, mouth, nose, or intestines. There may be hæmorrhages into the meninges, causing paralysis.

If the hæmorrhage is high up in the intestinal tract its tarry colour may simulate meconium, and thus it may be difficult to distinguish; the napkin round the mass of dejecta has, however, usually a pinkish tinge. If that is insufficient, microscopic examination for blood should be made, or if there is disintegration of the corpuscular elements the chemico-microscopic test for hæmin crystals will resolve any doubt.

There may be oozing from the umbilicus, usually capillary in nature, as in the second case noted above. Convulsions may ensue. Renal hæmorrhagic effusions have not been noted as a rule, but several cases are reported in which this did occur. Ashby¹ inclines to the view that these cases are likely to have a specific cause. Epistaxis is also infrequent, but may be recurrent. Holt² states this is often symptomatic of congenital syphilis.

The pulse is rapid and feeble, and may be irregular. Respiration is often irregular, and increased in rate. Temperature is almost invariably elevated, ranging from 101° F. to 103° F.; 106° F. has been recorded. Epstein, quoted by Ashby, points out, with regard to temperature, that absence of fever at any one given time is no criterion as to a non-febrile condition, as children are notoriously liable to have great and sudden variations in temperature; thus, for a record of temperature to be of value, it must be taken frequently. Loss of weight is rapid and great.

Wentworth³ publishes records of a blood examination. The blood was thick, and the corpuscular elements stained badly. There was a large increase of polymorphonuclear forms of leucocytes. The percentage of hæmoglobin was 12.5.

Diarrhœa is present in a large number of cases.

¹ *Diseases of Children.*

² *Diseases of Infancy and Childhood.*

³ *Text-Book of Pediatrics.*

Duration and prognosis.—Townsend's¹ statistics of observed cases show a death-rate of 62 per cent; of collected cases, 79 per cent. Half the fatal cases died in one day's illness; the remainder in less than one week's. Recovery took place within ten days, and, of the cases which recovered, two-thirds did so in five days.

It appears that the early cessation or absence of gastrointestinal hæmorrhages is of good omen, especially if the child nurses well. Weak, irregular pulse and respiration, with high temperature and refusal of food, are of evil omen. No case should be regarded as hopeless, as recovery may take place under most adverse conditions.

Diagnosis.—1. Pseudo or precocious menstruation should be distinguished from this condition. The course and regularity of recurrence, with the absence of grave concomitant symptoms, sufficiently indicate the difference between the conditions.

2. Cases of so-called *melæna neonatorum*, if accompanied by febrile disturbance and running an acute course, probably belong to this category.

3. Hæmorrhage from the bowel due to gastric or intestinal ulcer, occurring in very early life, should be separated from the above disease. The presence of symptoms, such as hæmatemesis, occurring regularly after nursing and response to the special treatment for such conditions, as in the case reported by Morris and Feldham,² with absence of the other symptoms of hæmorrhagica neonatorum, will sufficiently indicate the diagnosis. The separation of the above disease, viz., gastric or intestinal ulcer, from hæmorrhagica neonatorum has not as yet been done by most authors, but that it should be done is, I think, clearly demonstrated by the series of twenty-four cases of fatal infantile hæmorrhage reported by Düsser, in which gastric ulcer was found *post-mortem* in nine cases and intestinal ulcer in four cases.³ Grainger Bisset⁴ reports a case of pure *melæna* without hæmatemesis, in which gastric ulcer was found *post-mortem*. Goodhart⁵ reports a case of gastric ulcer in an infant, 30 hours old, in which, after death, the ruptured vessel could be seen with a

¹ *Archives of Pediatrics*, 1894, vol. ii.

² *British Medical Journal*, 18th February, 1905.

³ *Thèse*, Paris, 1889.

⁴ *Lancet*, 8th July, 1905.

⁵ *Path. Trans.*, London, 1883.

hand lens lying in the floor of the ulcer. Ulcers of the stomach or intestine have also been described by Relliet, Billard, Henoeh, Dreschfeld, and others.

4. Swallowing of blood from cracked or fissured nipples must be remembered, as well as blood swallowed from the maternal passages during parturition, if this latter event ever occurs.

5. Septic arteritis or phlebitis, with subsequent septicæmic rashes of a purpuric nature, ought to be excluded. It is not ordinary pyogenic organisms, so far as is known, that cause the typical disease of "*hæmorrhagica neonatorum*." Examination of the umbilicus will indicate the presence or absence of gross septic mischief.

6. *Hæmorrhagic* effusions into various tissues, due to presence of congenital syphilis, as in Fischl's cases quoted by Ashby, are also excluded. The later appearance, the absence of febrile manifestations and the presence of other specific symptoms, will, of course, differentiate the conditions. Townsend notes three of his cases with a clear syphilitic history in the parents.

7. *Hæmophilia* ought to be clearly distinguished from "*hæmorrhagica neonatorum*." They are not similar conditions. The striking family history of bleeders so impresses the lay mind that, if present, one is nearly always obtainable. Its occurrence after trivial traumata, its incidence in males, and its persistent liability to recurrence are points to be clearly borne in mind.

8. Acute fatty degeneration of the newborn (Buhl's disease) and hæmoglobinuria of the newborn (Winkel's disease) must also be distinguished. The early asphyxia, together with the grave icterus and cyanosis of the former, and the hæmoglobinuria, coma, collapse, and absence of fever of the latter, make a marked distinction.

9. Infantile scorbutus and purpura *hæmorrhagica* need to be remembered. The association of the former disease with improper feeding, and the duration, early appearance of rash with the frequent joint affections and onset later in life of the latter, sufficiently differentiate the diseases.

Morbid anatomy.—No gross lesions were found in typical cases. The bleedings were usually capillary, and showed a striking impartiality as to situation, being found in order of frequency in skin and subcutaneous tissues, mucous tracts, umbilicus, abdominal cavity, pleural cavity, meninges, thymus, &c. Anæmia of the internal organs was usually marked.

Dr. Service called the attention of the Society to Section XV of the proposed Glasgow Provisional Order, 1906-1907, in which the duty of informing the Medical Officer of Health of every birth occurring in the city is, among others, placed on the medical man attending at the birth. He thought that if such duty were imposed, it ought to be remunerated.

Dr. Malcolm Black spoke of the indefiniteness of the Order, as to whether the notification applied to a full-time living child, stillborn child, premature child, or immature child.

Dr. Service, Dr. Malcolm Black, and others were elected to form a committee, with powers to look into the matter and to confer with the Medical Officer of Health.

REVIEWS.

Surgical Pathology and Treatment of Diseases of the Ear. By BLAKE and RISK. New York and London: Appleton & Co. 1906.

Chronic Suppuration of the Middle Ear and Mastoid. By SEYMOUR OPPENHEIMER, M.D. London: Rebman, Limited. 1906.

Otitis Media der Säuglinge (Otitis Media of Infants). By DR. HERMANN PREYSING. Wiesbaden: J. F. Bergmann. 1904. (Glasgow Agent: F. Bauermeister, 49 Gordon Street).

THREE new books have recently been added to the library of the aural surgeon:—

1. *Surgical Pathology and Treatment of Diseases of the Ear*, by Blake and Risk.—American books are too often well-illustrated compilations. This is a record of personal experience. It is essentially a surgical treatise, the aural affections for which operation is unnecessary being in many cases hardly even hinted at. The surgical anatomy is briefly but carefully given. Aseptic technique is treated in a separate chapter, and is treated so fully that the separate references to it in subsequent chapters—references sometimes of considerable length—might well have been omitted. The chapter on inflammation of the middle ear is well written, and the indications

for surgical interference clearly stated. A great part of the book is occupied by the mastoid operation. This is, so far as the bone operation goes, well and carefully described; but the management of the soft parts is too briefly considered. The authors use the chisel for the hard parts of the bone, and gouges and sharp spoons for the softer parts. The drill seems not to be used. Blood-clot dressing is recommended in the management of the wound, but its failure is acknowledged to be frequent. Grafting by Thiersch's method, through the external auditory canal, is recommended, and packing by means of counted rolled gauze pellets is used instead of tape or a drainage-tube. Ligation of the jugular vein is fully described, and intracranial complications are briefly treated of. A chapter on post-nasal adenoids brings the book proper to a close, but there is a rather long appendix of eight headings. The book is well written, well illustrated, and has the ring of a personal experience.

2. The second work is *Chronic Suppuration of the Middle Ear and Mastoid*, by Oppenheimer.—This is a large, well-illustrated volume, like the last from an American author, but lacking the clearness of style and ring of personal experience of the work of Blake and Risk. The English is often execrable. The sentences are too long, and the meaning conveyed nebulous. Here is an example—"The essentials for successful results in ossiculectomy depend of necessity upon many factors, and while it is necessary on general principles to perfect thorough cleanliness with perfect drainage, and the removal of all diseased tissue as far as possible from the tympanic cavity, yet the careful selection of cases in which, as far as can be determined, the suppuration is limited to the ossicular chain or its immediate vicinity, or cases in which the presence of marked cholesteatoma can be excluded is requisite." The next sentence is even longer and hardly less obscure. There is so much of this kind of writing throughout the book that its meaning is often difficult to discern. The book is divided in two parts. Part I deals with operations through the external auditory canal; Part II with operations upon the mastoid process.

There is nothing new or very notable in the first part of the book. Some of the pictures of the anatomical preparations are good, but many of the operations are represented by enlarged schematic drawings, and are of little help in practical aural surgery. There is too much reiteration in the descriptions of the surgical procedures, and whilst one has

to admit the importance of the subject being discussed, clearness is often blurred by a too lengthened statement.

The second part of the book—that on the mastoid operation—is better than the first. The style is much better, the descriptions clearer, and the illustrations, though almost exclusively schematic, are much more helpful than those in Part I.

The various bone operations on the mastoid process are well described, and the various flap operations on the soft tissue are carefully detailed. Those who depend during operation on measurements for their guidance in avoiding the facial nerve and sigmoid sinus will find plenty of them in this volume. One of the most useful chapters in the book is the last—on the after-treatment of mastoid operations.

3. The third volume to be noticed is an account of a bacteriological and pathological investigation into the causes of otitis media in infants. One hundred non-selected cases of middle-ear disease were taken in succession as they came to *post-mortem* examination, the ages of the children ranging from 1 day to 3 years, the average age being about 7 months. Clinically, the causes of death were various, but diseases of the stomach and bowels accounted for 44 cases, and tuberculosis (mostly miliary) for 19 cases. Meningitis is given as the cause in only three cases, and sigmoid sinus thrombosis in one case. Altogether 154 ears were found to have purulent, mucous, or serous contents. The reason for the apparently large percentage of tuberculous cases is that the last 15 of the 100 cases were chosen with a view to determining the rôle of the tubercle bacillus in the production of middle-ear disease.

The author finds that the pneumococcus is present in 92½ per cent of the diseased ears, being a pure infection in 96 of the 154 ears, and a mixed infection in 16 others; whilst 33 of the 154 ears were "sterile." He comments on the large percentage of "sterile" ears, and explains this by the fact that histologically most of such ears showed evidences of "résorption," while of the remainder some were in the earlier stages of inflammation of the mucous membrane, and others were newly-born children whose inflamed ears were filled with liquor amnii.

Of the 19 tuberculous deaths, only 2 were found to show undoubted evidence of the ear disease being due to tubercle; miliary tubercles, with the central softening and typical giant cells, being found in the periosteal and submucous layers. No tubercle bacilli were found in any, and the middle-ear disease

seemed to be a pneumococcus infection primarily in the great majority of these cases.

In view of the results of the investigation he discusses the connection between ear and lung diseases, and comes to the conclusion that both the ear disease and the lung disease are the results of an infection of pneumococci from the upper-air passages—a preceding coryza being always noticed. In the case of the deaths from gastro-intestinal troubles, Preysing's observations point to the conclusion that there is a predisposition to middle-ear disease, and coryza of the upper air-passages. On the other hand, he states that in cases of robust children the rise and fall of the malnutrition correspond so closely with the progress of the ear affection that the latter must be regarded as supplying the toxins which gave rise to the succeeding attacks of gastro-intestinal disturbance, although the latter may be the cause of death.

The last part of the book is occupied by a series of forty plates of micro-photographs of sections, showing the middle ear during the progress of inflammation. The book is a record of careful work, and a valuable contribution to the bacteriology and pathology of ear disease.

Polypus of the Nose. By EUGENE S. YONGE, M.D. Edin. Manchester: Sherratt & Hughes. 1906.

IN this book, which is written, let us say, with that grace and style which we might have expected from a member of a literary family, the author advances his views as to the causation of nasal polypi. After an interesting historical survey, he discusses the various theories commonly held as to the origin of these growths. Rightly dismissing the old idea which looked upon them as of the nature of myxoma, he examines in detail the two theories associated respectively with the names of Grünwald and Lack. The former gives sinus suppuration as the *fons et origo mali*, while the latter has resuscitated the dry necrosis theory of Woakes to explain their presence. Both look upon the essential nature of the condition as being one of oedema of the mucous membrane.

Yonge's theory—and he backs it up with strong clinical and experimental evidence—is that the centre of gravity, so to speak, is the glandular element in the mucosa. As a result of inflammation the ducts of these glands become more or less blocked, the glands themselves become more active, and the result is dilatation. The author does not deny the association

of polypi with suppuration in the accessory sinuses in many cases, or with thinning of the walls of these cavities, of the ethmoidal cells especially (so-called dry necrosis), without suppuration in others.

The treatment is carefully described and, quite in conformity with modern views, the necessity for much more radical measures in most cases is insisted on.

The illustrations are sufficient and well executed, there is a full bibliography, and the printing and paper are good. Altogether the book is all that a brochure should be, so that it makes both pleasant and instructive reading, and we recommend it with pleasure and confidence to those interested in the subject.

The Illustrated Medical Dictionary, a New and Complete Dictionary of the Terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, and the kindred branches, with their Pronunciations, Derivations, and Definitions, including much collateral information of an encyclopædic character. By W. A. NEWMAN DORLAND, A.M., M.D. Fourth Edition, Revised and Enlarged. London: W. B. Saunders Company. 1906.

THIS admirable dictionary has been remarkably successful. Including reprints as well as fresh editions, it has been issued ten times within six years. The third edition was favourably noticed in these pages some time ago, and during the interval which has elapsed since then the author has been busy revising and adding to the work. Over 2,000 new words have been defined, most of the tables have been amplified, and six new coloured plates have been added. This dictionary well deserves the popularity it has attained.

Heath's Manual of Minor Surgery and Bandaging, for the Use of House Surgeons, Dressers, and Junior Practitioners. Thirteenth Edition. Revised by BILTON POLLARD, F.R.C.S. London: J. & A. Churchill. 1906.

THE fact mentioned on the title-page that this is the thirteenth edition is in itself a testimonial to this well-known little book. A reference to the contents explains the widespread popularity of the work. Such popularity is well deserved, and we consider that this *Manual* will be of use even to senior

practitioners. The type and illustrations both are good, and the external appearance of the volume is a fitting tribute by the publishers to the excellence of its contents.

Consumption: Treatment at Home and Rules for Living.
By H. WARREN CROWE, M.D. Bristol: John Wright & Co.
1906.

THIS little book is intended for practitioners to give their patients, and it conveys many valuable hints as to combating tuberculosis. The rules laid down are clear, and the language used will be found suitable for the lay mind. The tone of the book is bright, and the author briefly inculcates the principles of open-air life, diet, the rest-cure, exercise, and disinfection, and points out how it is possible to carry out sanatorium treatment at home; and this, alone, we regard as a distinct contribution to the anti-tubercular crusade.

The Hygiene of Mind. By T. S. CLOUSTON, M.D., F.R.S.E.
With 10 Illustrations. London: Methuen & Co. 1906.

THOSE who are familiar with Dr. Clouston's earlier writings will take up this book with the most agreeable anticipations, and these will not be disappointed when the perusal is begun. The work is designed for the lay public rather than for the medical profession, but the medical reviewer, already well versed in Dr. Clouston's teaching, and proposing at the outset simply to give a rapid glance through the work, to note its principal contents, and the mode in which the subject is treated, finds it impossible to carry out this plan. The language and style are so fascinating, and the subject is presented in a form so attractive, that the reader cannot stop where and when he wishes. Beginning with a chapter which touches on the problem before him, the author proceeds to describe the "mind machinery" in the brain, and "how the brain mechanism works in regard to mind." The general principles, essentials, and ideals of mental hygiene next come under review, and thereafter the questions of heredity, temperament and social instincts. Next we have a very important chapter on the connection of mind, morals, and will with brain, and this is followed by chapters on the emotions, bodily disease, manners, play, work, and fatigue. The different periods of life are studied in a series of six chapters, which

are followed by four others on special sex questions; on the mental hygiene of alcohol, tobacco, and other brain stimulants and sedatives; on the counteractive effects of mental hygiene; on the mental tendency to degeneration in our modern and city life; and on hygienic knowledge and physiological charity.

Dr. Clouston has performed his allotted task in a truly admirable manner. We know of no safer or saner counsellor in such a subject as mental hygiene, and we heartily recommend this work to all who take a genuine interest in the rearing of a sound imperial race for our Empire.

Minor Maladies and Their Treatment. By LEONARD WILLIAMS, M.D., M.R.C.P. London: Baillière, Tindall & Cox. 1906.

THE matter, form, and style of this work are peculiar to its origin in the lectures to graduates delivered by the author at the Medical Graduates' College and Polyclinic. The book is none the less useful on that account; its value is rather enhanced by the personal character of the observations and the evidences of mature consideration founded on experience. We find no stereotyped classification of diseases and their symptoms in the manner of a text-book, nor a monologue tinged by a particular bias, but a reliable guide to the elucidation of the commoner diseases from the practitioner's point of view. In five chapters—entitled successively Coughs, colds, and sore throats; Indigestion; Constipation, diarrhoea, vomiting, and giddiness; Rheumatism, neuralgia, headache; Goutiness—the author discusses these conditions and symptoms, their causes and their treatment. In every case he gives a reason for his opinion, and, while quoting the opinions of others, he is careful and explicit in narrating the results of his own experience. Believing in the bacterial origin of colds, for example, he does not discuss the recent researches as to the identity of the particular micro-organisms, but he advocates measures well calculated to limit their effects. The conflicting views on the origin of gout are briefly stated, and a commonsense view of the situation is given, together with a thoroughly practical exposition of the condition, its recognition and treatment. Avowedly conservative in the use of new drugs, Dr. Williams is evidently familiar with the current literature of his subjects. He accepts Professor Stockman's classification of "rheumatism," and his discussion

of arterial high tension is well worth careful study. The chapters on "Change of Air" and "General Health" are written in a similar strain; that on "Some Drugs and Their Uses," though somewhat redundant, is essentially practical; and the last chapter, on "Insanity," inculcates an attitude, and an excellence of procedure, which, if attained and practised, would eliminate most of the difficulties of certification. There are some omissions, such as are apt to occur in a first edition. Cerebral vomiting is mentioned on page 100, but the character of the emesis is not described. The use of atropine, in order to determine or eliminate eyestrain as a cause of headache, has escaped notice (pp. 102, 143). The statement on page 119, line 18, that "arthritis is never accompanied by fever," . . . is more definite than correct. Phenazone is written "phenozone" in the last line of page 133; and in the instructions as to the use of urotropin the advisability of copious dilution is omitted. Notwithstanding these, and slips like "fundus oculi" for fundi oculorum (p. 100), this volume will be of very great value to the young practitioner, and its perusal will stimulate and refresh the minds of most experienced medical men. A very complete index of about 40 pages permits of easy reference. The type is clear and well set on good paper.

Æquanimitas, with other Addresses to Medical Students, Nurses, and Practitioners of Medicine. By WILLIAM OSLER, M.D., F.R.S. Second Edition, with Three Additional Addresses. London: H. K. Lewis. 1906.

The Growth of Truth, as Illustrated in the Discovery of the Circulation of the Blood, being the Harveian Oration delivered at the Royal College of Physicians, London, 18th October, 1906. By WILLIAM OSLER, M.D., F.R.S. London: Henry Frowde. 1906.

THIS volume of addresses was first published in October, 1904, and twice reprinted in 1905. Its success, therefore, was assured long ago, and we should say that rarely does a book of the kind deserve popularity as this one does. Apart altogether from his distinction as a physician, Professor Osler might well claim, on the strength of these essays, to rank as one of the foremost men of culture of our time. It is not easy in a few lines to do justice to the beauty of language, the wide reading in the best books, the goodness of heart, the intellectual power and training, and the capacity for work

which are revealed in these pages, but we would urge every medical practitioner or student who has not already read these addresses to get them forthwith and read them. The three which have been added to the new (1906) edition include the famous one entitled "The Fixed Period," which, being misinterpreted, gave rise at first to a good deal of comment in the press. The second is on "The Student Life," and the third is entitled "Unity, Peace, and Concord." In the closing chapter, "*L'Envoi*," we have a humorous account, among other things, of the way in which Dr. Osler proved his fitness for the Chair of Clinical Medicine in the University of Pennsylvania. On the last page we have the author's "Bed-side Library for Medical Students."

The Harveian oration on the "Growth of Truth" appeared in the medical press some time ago, so that any detailed notice of this new work is unnecessary. The difficulty of saying anything fresh on such an occasion as the constantly recurring Harveian oration is immense, and yet we may safely appeal to any reader of this address if Professor Osler has not overcome that difficulty in a truly brilliant fashion.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

SURGERY.

By ARCH. YOUNG, M.B., C.M., B.Sc.

Bone Cysts. By George P. Müller, M.D. (*Univ. of Penn. Med. Bulletin*, September, 1906).—This paper classifies all the forms of cysts met with in bone, with the exception of those cysts of the jaw associated with defective development of one or more parts of the tooth-germ.

Cysts of the long bones particularly, also of the short long bones, are known to occur—(1) From parasites (*echinococcus*, &c.; (2) in *osteomalacia*; (3) in *arthritis deformans*—from softening of an inflammatory area of bone near a joint; (4) as a cystic degeneration of the entire skeleton of unknown origin; (5) from softening in solid tumours (*sarcoma*, *enchondroma*, *myxoma*, &c.); (6) as simple benign cysts, due to softening of a *rest* of embryonic cartilage, or from softening of an inflammatory or hæmorrhagic focus.

1. *Hydatid cysts* may resemble benign cysts clinically; they occur in cancellous tissue; they are uncommon; even in hydatid disease the bones are affected in only 3·5 per cent.

2. In *osteomalacia* the cystic formation is due to rarefying osteitis. It may be evident if x-rays are employed, or perhaps only upon fracture or bending of the bone taking place.

3. The cysts occurring in *arthritis deformans*, described by Ziegler and others,

occur near joints, and have a thicker layer of bone around them than do benign bone cysts. Fracture does not, therefore, readily occur.

4. *Cystic degeneration of the entire skeleton* has not, so far, been adequately described or investigated. Engel in 1864 described one case, and Heinecke more recently observed a somewhat similar condition.

5. *Cystic degenerations in solid tumours*, such as sarcomas, myxomas, and enchondromas, are well enough recognised. They are usually easily distinguishable from benign bone cysts. Rapidly growing, round and spindle-cell sarcomas should be early recognised and dealt with at once, by amputation or other approved means. Giant cell medullary sarcomas are clinically quite different, and, indeed, are practically benign. They are not unlike the simple cysts (of next group), and diagnosis will often be definitely made only by microscopic examination. "Blood cysts" so-called, "bone aneurysms" so-called, mixed enchon-fibroma cysts, and myxomatous degeneration cysts are frequent enough, and are well enough recognised.

6. *Benign bone cysts*, which are chiefly dealt with in this paper, were first accurately studied by Virchow (1876), with special reference to a case of his own, and one of Froriep (dating back to 1838). In 1884 Billroth examined the question of the etiology of these cysts, and compared them with the normal skull cavities, and with dentigerous cysts. Recorded cases were few, however, till x-ray diagnosis was made possible. The author of this paper bases his description of the cysts belonging to this class upon one observed case of his own, and forty-three others found in literature, especially founding his conclusions on the papers of Bloodgood, Schlange, König, Koch, Haberer, and Mikulicz.

The case observed by Müller was operated upon by Dr. C. H. Frazier. In it the fourth left metatarsal bone was involved. The patient was a youth of 19 years. In May, 1903, a swelling was observed over the fourth metatarsal, painless except when pressed on directly. The swelling was not traceable to trauma or other known cause. During June and July it decreased in size, but in August it again increased, and became firmer in consistency. Pain began to be felt, and walking was possible only with difficulty by the time September arrived. The swelling was fusiform, smooth and not inflamed, when the youth was admitted to hospital. An x-ray photograph revealed the cystic nature of the tumour, though some doubt as to its pathology still remained.

The fourth metatarsal was disarticulated. There has been no recurrence up till now, three years from the operation.

When the metatarsal was divided longitudinally the cyst was found occupying the distal half, and extending to near the joint cartilage; in size it was about that of a pigeon's egg; its contents were reddish-brown, serous, and quite fluid. The cortical bone was expanded, its thinnest part only 2 mm. thick; it was here easily bent. The cavity was lined with reddish soft tissue, ridged here and there, and trabeculated. There were no visible areas of cartilage. No culture was made from the contents. Microscopically, the thin cortex showed long, narrow trabeculae and widened cancellous spaces. The soft tissue was seen to be active granulation tissue, with abundant fibroblasts, well-formed blood-vessels, and not a few giant cells (osteoclasts). The periosteum was fibrous, and is said to have been minus an osteo-genetic layer; the muscles outside were uninvolved. No areas of cartilage were detected. The case very closely resembles one described by Corson.

Site.—Of the 44 cases collected, 76 per cent of all the cysts (50 in number) were located in the femur (38 per cent), the tibia (22 per cent), and the humerus (16 per cent). The remainder were of the phalanges (3), the pelvis (2), the fibula, radius, ulna, calcaneum, metatarsus, lower jaw, parietal (1 each). In four of the cases more than one bone was involved. In 37 cases, where the fact is recorded, the right side was involved 23 times; the left, 14.

Age.—67.5 per cent of 39 cases were under 20 years of age; 82.5 per cent under the age of 30.

Sex.—Of 41 cases, 22 were in males, 19 in females.

Symptoms.—The cardinal symptoms are pain, swelling, impairment of

function, and fracture on slight trauma. These are almost pathognomonic, if only a cystic sarcoma be excluded. Curiously, "in most of the reported cases, the bones re-united under treatment, and the true nature of the lesion was only suspected by the subsequent occurrence of pain or swelling at the site of the old fracture."

Duration.—May vary from several months to several years.

Diagnosis.—Difficulty is chiefly met with in distinguishing the benign cysts from those of myxo-chondro-sarcomas and giant-cell sarcomas. Differential diagnosis may be, indeed, impossible until the cavity is laid open at operation, but "fortunately all these lesions may be cured by a conservative operation." The bone cyst proper occurs most often before the completion of the diaphysis of a long bone, but not always. The sequence of symptoms is usually pain, lameness, fracture, and swelling. A radiograph, or x-ray screen, will show a light central cavity, and encircling shell of bone. Confirmation at operation will depend on (1) the normal, uninfiltated condition of the external tissues; (2) the smooth unchanged condition of the periosteum; (3) the characteristic rarefied shell, which may feel soft to pressure; (4) the cyst contents, clear or turbid, red or reddish-brown or yellow, serous or mucoid; (5) the smooth, ridged or trabeculated red-brown lining tissue of the cavity; (6) the occurrence here and there of areas of cartilage (in about half the cases).

Prognosis.—Recovery should occur in practically every case. Of the 44 cases, recovery took place in all but 4; those of Froriep (1833), Körte (1880), and Westphalen (1889), a unique case from the point of view of age, the patient being 82 years old).

Treatment.—This should always be conservative. The tumour should be exposed, a "lid" raised, and the cyst contents and lining thoroughly removed. The cavity should be cauterised, treated with pure carbolic acid, or packed with gauze or iodoform wax. Subsequent fracture should be guarded against, e.g., by plaster of paris support.

Etiology.—Three chief theories are—(1) That of Virchow (1876), that these cysts result from softening of a portion of cartilage from the epiphysis—cartilage being found in the wall of the cyst in about 50 per cent of the reported cases; (2) that of Beck, that they result from an inflammatory atrophy, similar to osteomalacia or rickets, and due to nutritive disturbance, characterised by the production of a rarefying osteitis, leading to considerable localised disappearance of bony tissue; (3) that of D'Arcis and others, that slight trauma causing a localised hæmorrhage is the causative agent, the hæmorrhagic focus passing on to definite cystic change.

Müller's case could not be explained as due to rickets or trauma, and no cartilage "islands" were found in the cyst wall.

The author's conclusions agree with those of V. Mikulicz:—

"1. Bone cysts are most frequently observed during the period of growth of the individual.

"2. The long bones are most frequently affected, especially the femur, tibia, and humerus.

"3. Slight trauma is a fairly constant etiological factor.

"4. Bone cysts can be cured by thorough curetting, and recurrence should not take place."

DISEASES OF THE SKIN.

By J. WYLLIE NICOL, M.B., C.M.

The Radio-Therapeutics of Ringworm at the Municipal Laboratory of the City of Paris at the Hospital of St. Louis. By Dr. R. Sabouraud (*British Journal of Dermatology*, vol. xviii, No. 6).—The details of the method employed by Dr. Sabouraud are now well known. It is not,

therefore, necessary to summarise the interesting description (illustrated) of it given here. Of special interest are the financial and therapeutic results achieved in dealing with the great material at the Ecole Lailler.

Favus is uncommon in Paris, while ringworm is widespread. Favus with scutula is not cured with certainty by a single exposure to x-rays. One application, if well made, cures four-fifths of the disease, then the few points where new scutula appear are denuded by depilation with forceps. Ringworms, including large and small spored, are always cured by one depilation with the x-rays. The result has been that the number of children affected with ringworm cured without admission to hospital has been considerably increased, and consequently the number of cases admitted to hospital was correspondingly diminished, and for these latter the time of their detention has been lessened by five-sixths. Ringworm formerly was cured on an average in twenty-seven months; it is now possible to cure it in six weeks. Parents who were not willing to undertake for two years the trouble of the treatment of their children, and demanded admission to hospital, will undertake this trouble for two months. A ringworm patient in a hospital in Paris costs 2·80 francs per day to the Assistance Publique; but when treated by x-rays the only cost is about 50 centimes for each exposure (of which from one to twelve may be required to denude the entire head). Owing to the increase of the cases treated without admission, and to the lessened detention of those admitted, the accommodation previously needed for ringworm became too extensive, and on 1st January, 1904, Dr. Sabouraud was able to give up to the Assistance Publique 150 beds, which are now used for medical and surgical patients. A bed in a Paris hospital represents on an average a capital of 10,000 francs; 150 beds represent, therefore, 1,500,000 francs. In a short time Dr. Sabouraud will be able to give up a further 100 beds—that is, a million of francs.

Up to 1903 the children with ringworm lived at the Ecole Lailler for a period exceeding two years, and there was an average of, 110 cures per year. In the first year of treatment with x-rays (1903-1904), there were 327 cures; and in 1905 there were 504 cures. The cure of a case used to cost on an average 2,000 francs; it now costs 260 francs.

A further saving has also resulted, because the boarding out of 250 ringworm cases in provincial hospitals at 1·90 francs per head per day is no longer necessary. By the end of 1906 the application of the x-rays for ringworm will have recovered a capital of two and a half millions of francs, and it will effect a further saving annually.

"Granulosis Rubra Nasi" (Jodassohn): A further Contribution. By Dr. J. M. H. Macleod (*British Journal of Dermatology*, vol. xviii, No. 10).—The author has now had two cases, and upon his own observations and the literature of thirty-two recorded cases Dr. Macleod bases the following general description of the disease:—

"Granulosis rubra nasi" is an affection of the nose characterised by persistent hyperidrosis of the skin of the cartilaginous portion, associated with diffuse redness and the presence of inflammatory micro-papules at the sweat orifices. Cases have been described under the following headings:—Hydrocystoma (Pringle); A peculiar form of acne, with changes in the sweat-glands (Luithlen); Granulosis rubra nasi, Perisyringitis chronica nasi, Dermatitis micro-papulosa erythemata hyperidrotica nasi (Jodassohn); A peculiar inflammatory dermatitis of the nose of young individuals, with sweating (Hermann); False acne rosacea of children (Andry); A form of chronic erythema of the nose in children (Dubreuilh).

The disease affects the skin over the nasal cartilages, spreading over the ala nasi, and extending in front from the tip to the bridge. The column and the edges of the nostrils are, as a rule, exempt. It may spread to the cheeks and upper lip. It never attacks the mucous membrane. The skin is more or less red. This redness is diffuse, clearly limited at the sides, and fading gradually into the normal skin above. It varies from a pale pink to a purple tint. A few small telangiectases may be detected. The nose is, as a rule,

cold, and moist from the presence of beads of sweat. Reddish-brown macules and micro-papules are studded over the surface; these disappear under pressure with the diascop. They are frequently situated at the orifice of a sweat-duct. Sometimes small vesicles can be detected; occasionally these are as large as a pin's head, are clear or bluish, and contain a clear fluid. The large vesicles are indistinguishable from those of hydrocystoma, and have only been noted in a few of the cases (Pinkus). Subjective symptoms are, as a rule, absent.

The disease begins insidiously in early life, and persists more or less uninfluenced by treatment, heat, and cold, till puberty, when, as a rule, it gradually disappears. The disease usually attacks weakly, badly-nourished children, showing evidences of weak peripheral circulation, such as chilblains, congested extremities, and occasionally marked hyperidrosis of the palms and soles. Sex does not seem to play an important part, for out of 30 cases 17 occurred in boys and 13 in girls.

The records so far do not permit of any conclusion as to heredity. Lebet has, however, described a case in which the mother of the girl was also affected. Pringle has seen the condition in a brother and sister. Temperature has a considerable influence on some cases, extremes of heat or cold aggravating.

Histological examination shows that the epidermis is slightly, if at all, altered. It may be thickened or there may be parakeratosis near the sweat orifices. The essential lesion is found in the corium. The superficial blood capillaries are dilated, and around them there is a slight cellular infiltration. There is similar infiltration round the sweat-ducts; these cell deposits cause the micro-papules. The infiltration consists of polynuclear leucocytes and fibroblasts, but a few plasma cells and mast cells may be present. Above the infiltration the interepithelial lymphatics may be dilated, and a few leucocytes may be detected between the prickle cells. The fibrous elements of the corium are not involved, and the pilo-sebaceous follicles are normal. Beneath the infiltration the sweat-duct may be dilated, and even retention sweat cysts formed; hence the presence of the hydrocystoma lesions in association with *granulosis rubra nasi*. As regards the pathogenesis, it is disputed whether the vascular congestion or the hyperidrosis is the primary element. The general belief now is that a passive dilatation of the capillaries is the initial factor, and leads to defective nutrition and hyperidrosis. Hallopeau believes it to be an angioneurosis, closely related to asphyxia of the extremities.

In the differential diagnosis *lupus vulgaris*, *lupus erythematosus*, *rosacea*, and *acne vulgaris* must be excluded. It can be most readily confused with *lupus*, but is distinguished by the disappearance of the micro-papules under the diascop, the absence of ulceration, the presence of beads of sweat and pseudo-vesicles. From *lupus erythematosus* it differs by the absence of adherent scales and atrophy, and from *acne vulgaris* and *rosacea* by the pilo-sebaceous follicles not being involved. Treatment has been largely symptomatic—tonics, fresh air, and good food. Scarification is the only local treatment which has produced more than temporary improvement. The prognosis, however, is excellent, as the disease usually disappears at puberty.

Illustrations of the author's first case, and of Dr. Colcott Fox's case, may be found in vol. xv, p. 197, and vol. xviii, p. 320, respectively, of the *British Journal of Dermatology*.

PUBLIC HEALTH AND INFECTIOUS DISEASE.

By JOHN BROWNEE, M.A., M.D. GLASG., D.P.H. CAMB.

Fourth Outbreak of Plague at Sydney, 1904 (Medical Officer's Report), and **The Epidemiology of Plague**. By J. Ashburton Thompson, M.D., D.P.H. (*Journal of Hygiene*, October, 1906).

Sydney has been in recent years visited by four epidemics of plague, in 1900, 1902, 1903, 1904, the medical report on the last of which forms the subject of the first paper, while the second contains a minute analysis of the facts and results of an extensive epidemiological inquiry into all four epidemics. Where, as usually happens, investigation has to be carried out amongst people alien to the observer, the difficulties are such as to deprive the results of most of their value. But in Sydney the administration was dealing with a white population, and was able to rely on the co-operation of the people, without which the success of the epidemiological method is impossible. Thus a most elaborate and comprehensive account was made of all the outbreaks and by comparing and collating them definite and reliable results were arrived at.

The disease is not communicated direct from the sick to the well, else there would have been more examples of household infection. In the first epidemic 276 houses gave 289 cases; in the second epidemic 124 houses gave 139 cases; and similarly in the other outbreaks, practically "one house one victim." These people inhabiting, as they did, scattered dwellings even at distances of 100 miles, and in spite of ample opportunity, infected no others. Nor is the contagion carried by clothing or household goods, at least not to any important extent, for it would be likely to affect first of all those nearest to the patient, i.e., his own household, which it does not do; further, people were attacked in the last epidemic at intervals exceeding the incubation period of the disease. The mode of spread occurs in two ways—by direct contiguity to other dwellings, or by apparent sporadic outbursts at a distance, constituting a new form of infection area and behaving in all respects like the major epidemic. The term "infection area" was found capable of being narrowed down to infection house or infection building, and it was found that when these places were cleared of filth and dirt, the disease was effectually banished in the great majority of cases, sufficient to constitute a general rule—exceptions being held to be due to reinfection of premises. Thus the contagion lodges in localities but is not permanent in them.

These facts point unerringly to the participation of some animal in the spread of the disease, and of these the rat is the commonest, and is a known subject of plague. Consequently a collateral investigation was pursued into the epidemiology of rat plague not only during the outbreaks but including the inter-epidemic periods. The difficulties were very great, but the facts gained point to the following conclusions:—

"(a) An epizootic disease among rats preceded the first case which occurred in man."

"(b) This epizootic was plague."

"(c) The area over which the epizootic extended was practically co-extensive with that on which cases of plague in man were observed."

"(d) The epizootic died out at the same time as the epidemic ceased."

Having thus determined that there can be no epidemic without a corresponding and preceding epizootic, it remains to settle the relationship of the one to the other. An attempt to correlate these two parallel epidemics as regards cause and effect reveals discrepancies so remarkable as to demand the concurrence of another factor and by a process of induction—by consideration of site of bubo, seasonal prevalence, &c.—the flea is fixed on as the intermediary. It happens that, since the above papers were published, the rôle of the flea has been established and a complete experimental proof furnished of the direct transmissibility of plague from infected to healthy rats and from rats to guinea-pigs. The above hypothesis of Dr. Thompson may be said to have been now experimentally verified. (See the recent Report on Plague Investigation in India, reviewed in the *Glasgow Medical Journal*, January, 1907.)—A. S. M. M.

PATHOLOGY.

By JOHN H. TEACHER, M.D.

The Etiology and Prophylaxis of Dracontiasis (Guinea-worm Infection). By R. T. Leiper, M.B.Glasg., F.Z.S., Helminthologist to the London School of Tropical Medicine (*Brit. Med. Journ.*, 19th January, 1907, p.129).

This paper embodies the results of Dr. Leiper's observations and experiments on dracontiasis at the Gold Coast and other parts of West Africa. He has confirmed the observation that the embryos which are discharged from the sores of human beings are incapable of maintaining their life or developing in the free state, and has demonstrated by direct experiment that they are incapable of boring into the human skin as the embryos of ankylostoma are known to do.

He confirms the discovery of Fedtschenko that they develop in the cyclops. It appears probable that they enter this host by the intestinal canal and not, as has been supposed, by boring through its integument.

Dr. Leiper found the cyclops to be very readily infected with guinea-worm, while no others of the pond animals with which he worked became infected; and the metamorphosis through which the embryo passed was complete, so that there appears to be no necessity for supposing that any intermediate host other than cyclops is necessary for the life cycle of the guinea-worm.

As to the mode by which the larva is transferred from the cyclops to man Dr. Leiper found that the larvæ did not become free swimming, as would be necessary if they were to effect entry through the skin; but that they remained in the cyclops, becoming more quiescent, and if the host died they died within it. On the other hand, if the infected cyclops were transferred to 0.2 per cent HCl solution, representing the gastric juice, the cyclops died at once while the embryo awoke to great activity and escaped from its host and swam about in the fluid. This observation suggests very strongly that the transference occurs through the ingestion of infected cyclops in drinking water. To clinch the argument a monkey was fed with infected cyclops (in bananas), and on *post-mortem* examination six months later five filariæ, identical in their morphological characters with the guinea-worm, were found in its tissues. Filariæ peculiar to the monkey, however, cannot be excluded. On the other hand, feeding with the newly-shed embryos had no result.

Attention being directed to water it was found that the embryos died in salt or brackish water, or if allowed to dry, and that the large lagoons and rivers were free from cyclops. On the other hand numerous cyclops were found in the ponds from which the villages get their drinking water.

The life cycle of the parasite apparently therefore requires that it should be discharged living into fresh water inhabited by cyclops, and that these after a time should be swallowed by human beings. Accordingly the principal line of prophylaxis should be the care of the water supply. The introduction of gravitation water supply from the large rivers or from large and well protected reservoirs would probably rid the towns of dracontiasis.

For the villages, the protection of the ponds by walls and the provision of proper drawing places, or pumps connected with them by pipes, so that the infected native would not wade into the water (as is his habit) and discharge his embryos into it, would, in the opinion of Dr. Leiper, reduce the chances of infection 90 per cent. Educating the native to refrain from bathing in the ponds from which he drinks would be a measure tending in the same direction. Finally, Dr. Leiper suggests that the habits and conditions of life of the cyclops might be investigated with a view to determining whether it would be possible to destroy it, as is done with mosquito larvæ, without rendering the water unfit for use.

Books, Pamphlets, &c., Received.

- Abdominal Pain: Its Causes and Clinical Significance, by A. Ernest Maylard, M.B., B.Sc.Lond. Second Edition, Revised. J. & A. Churchill. 1906. (7s. 6d. net.)
- Elements of Practical Medicine, by Alfred H. Carter, M.D., M.Sc. Ninth Edition. London: H. K. Lewis. 1906. (10s. 6d. net.)
- Transactions of the Twenty-eighth Annual Meeting of the American Laryngological Association. 1906.
- Operative Gynecology, by Howard A. Kelly, A.B., M.D., LL.D., F.R.C.S. (Hon. Edin.) With 11 Plates and 703 Original Illustrations. Second Edition, Revised and Enlarged. Two Volumes. London: Sidney Appleton. 1906. (£3, 3s. net.)
- Cancer of the Breast and its Operative Treatment, by W. Sampson Handley. London: John Murray. 1906. (12s. 6d. net.)
- A Text-Book of Genito-Urinary Diseases, including Functional and Sexual Disorders in Man, by Dr. Leopold Casper. Translated by Charles W. Bonney, B.L., M.D. With 213 Illustrations, and 23 Full-page Plates. London: Rebman, Limited. 1906. (26s. net.)
- Atlas of Applied (Topographical) Human Anatomy for Students and Practitioners, by Dr. Karl von Bardeleben and Prof. Dr. Heinr. Haeckel. Authorised English Adaptation from the Third German Edition (containing 204 woodcuts), by J. Howell Evans, M.A., M.B. London: Rebman, Limited. 1906. (32s. net.)
- Woman's Health and How to Take Care of it, by Florence Stacpoole. Second Edition, Revised. Bristol: John Wright & Co. 1906. (Stiff boards, 1s. 6d.; Cloth, 2s. 6d.)
- Outlines of Human Embryology: A Medical Student's Handbook of Embryology, by George Reese Satterlee, M.A., M.D. New York: John Wiley & Sons. 1906. (5s. 6d. net.)
- Glimpses of American Surgery in 1906, by C. Hamilton Whiteford, M.R.C.S., L.R.C.P. London: Harrison & Sons. 1906. (2s. net.)
- Text-Book of Comparative General Pathology for Practitioners and Students of Veterinary Medicine, by Professor Dr. Th. Kitt; Authorised Translation by Dr. William W. Cadbury; Edited with Notes and additional Illustrations by Dr. Allen J. Smith. With 4 Coloured Plates and 131 Text-Illustrations. London: Baillière, Tindall & Cox. 1906. (25s. net.)
- Post-Mortem Pathology, a Practical Treatise for Students and Practitioners, by Henry W. Cattell, A.M., M.D. Third Edition. With Coloured Plates and Figures. London: J. B. Lippincott Company. 1906. (18s. net.)

**GLASGOW.—METEOROLOGICAL AND VITAL STATISTICS FOR
THE FIVE WEEKS ENDING 26TH JANUARY, 1907.**

	WEEK ENDING				
	1906. Dec. 29.	1907. Jan. 5.	Jan. 12.	Jan. 19.	Jan. 26.
Mean temperature, . . .	32·3°	35·9°	44·1°	42·6°	34·1°
Mean range of temperature between day and night, . .	27·9°	30·1°	15·2°	19·2°	29·5°
Number of days on which rain fell, ...	5	6	5	2	3
Amount of rainfall, . . ins.	0·39	1·31	0·51	0·04	0·30
Deaths registered, ...	318	330	330	322	307
Death-rates, ...	19·9	20·3	20·3	19·8	18·9
Zymotic death-rates, . . .	1·6	1·7	1·4	1·5	0·9
Pulmonary death-rates, . .	7·5	7·4	7·8	6·3	5·9
DEATHS—					
Under 1 year, ...	67	58	51	64	55
60 years and upwards, . .	79	64	88	68	66
DEATHS FROM—					
Small-pox, ...	...	...	..	...	...
Measles, ...	...	2	1	2	1
Scarlet fever, ...	3	2	2	...	3
Diphtheria, ...	1	4	3	5	..
Whooping-cough, ...	16	11	13	12	11
{ Fever, ...	5	6	3	2	...
{ Cerebro-spinal fever, . .	4	7	11	14	21
Diarrhœa, ...	4	3	4	5	10
Croup and laryngitis, . .	...	..	...	...	1
Bronchitis, pneumonia, and pleurisy, ...	85	79	93	77	64
CASES REPORTED—					
Small-pox, ...	...	...	...	...	...
Cerebro-spinal meningitis, .	5	10	30	30	28
Diphtheria and membranous croup, ...	24	32	28	39	35
Erysipelas, ...	19	32	33	23	28
Scarlet fever, ...	22	23	26	26	35
Typhus fever, ...	...	...	...	...	...
Enteric fever, ...	10	15	9	21	13
Continued fever, ...	...	...	...	...	..
Puerperal fever, ...	1	2	2	1	2
Measles,†	17	20	93	68	43

† Measles not notifiable.

SANITARY CHAMBERS,
GLASGOW, 31st January, 1907.

THE
GLASGOW MEDICAL JOURNAL.

No. III. MARCH, 1907.

ORIGINAL ARTICLES.

A CASE OF ANKYLOSIS OF THE SPINE.

By WALTER K. HUNTER, M.D., D.Sc.,

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Queen Margaret College, University of Glasgow.

THE outstanding feature of this case is the rigidity and immobility of the vertebral column, but associated with that is a generalised muscular atrophy, as well as contractures in certain groups of muscles.

The patient is a man, aged 48, a marine fireman by occupation, and he was admitted to the Glasgow Royal Infirmary on 17th September, 1906, complaining of shooting pains in the small of his back and stiffness in his neck. He dates his illness from a severe wetting which he got three years ago, for shortly after that he first felt the pain in his back. Its onset was gradual, and at first, when warmed up at his work the pain would leave him, but when he was cold it would be so bad that he had difficulty in bending.

Ten months ago the pains began to shoot from the lumbar region up to the neck and across the shoulders, but never

¹ Read at a meeting of the Glasgow Medico-Chirurgical Society held on 2nd November, 1906.

down the limbs. About this time, too, the neck commenced to get stiff. At first he could work the stiffness out of his back and neck to a slight extent, but not altogether. If he got a jar through stepping carelessly a pain would shoot right up from the small of the back to his neck. Gradually the pain and stiffness in his back has got worse, so that now and for the past ten months he has been unable to work. He has not been confined to bed all that time, but has been able to be up for part of each day. There has been no pain in any of the other joints, but during the past four months the right shoulder has gradually been getting stiffer. During the last three years he has been losing flesh, and especially in the past twelve months has he got much thinner.

He had typhus fever when 20 years of age, and a sprained ankle when 24. But he never had rheumatic fever, and, indeed, cannot remember having had pains of any description in his joints. He had gonorrhœa once, twenty-five years ago, but there is no history of syphilis.

As a fireman he was exposed to great heat and then to cold, but not till this illness came on did he feel any ill effects. When sailing he had not much liquor, but when in port he was pretty often drunk. He drank beer and porter rather than spirits. He was always well fed and well clothed. He married twenty-five years ago, but his wife has been dead for ten years. There is one son alive and well, but the patient thinks his wife had also some miscarriages. He knows little of his family history, and knows of none of his relations having had anything wrong with their joints.

On examination, the patient is seen to be considerably emaciated, and he looks much older than his 48 years. He weighs 7 st. 2 lb.; formerly his weight was 10 st. 11 lb. He lies most comfortably in the dorsal decubitus, and it is with difficulty he can turn on his side or sit up in bed. When standing, the knees are slightly bent and the shoulders thrown forwards, so that the vertex of the head is about 12 inches in front of the posterior vertical line of the body (Fig. 2). The head is rotated slightly to the left, and the right sterno-mastoid stands out prominently under the skin (Fig. 1). There is a slight lateral curvature, with the convexity to the left (Fig. 3). There is practically no movement of the vertebral column. When told to look to one side or the other the whole body is rotated, and when the shoulders are fixed the extent of movement, as measured at the point of the nose, does not represent more than 1 inch in the circumference of a circle. There is absolutely

no backward or forward movement of the head when the patient looks up or looks down. The vertebral column, indeed, is like one rigid bone with no joints in it whatever. The thorax is quite immobile on deep respiration, the ribs being apparently firmly soldered to the vertebræ. No exostoses can be found on any of the vertebræ or their processes. The shoulder-joints also show some limitation of movement. The right arm cannot be abducted more than 6 inches from the chest wall, and the left cannot be raised higher than the level of the shoulder. But backward and forward movements are fairly good in both. No grating or swelling can be made out in these joints, and it is not certain whether the lack of movement is due to disease in the joint or to contracture in the adductor muscles of the humerus, which become exceedingly tense when the arm is extended outwards from the side. It is noted, however, that there is some slight swelling, with redness, over both sterno-clavicular joints and that the clavicles are unduly mobile at these articulations. In none of the other joints throughout the body is there evidence of disease, for in none is there any deformity or grating; and any lack of movement at the knees seems to be due to muscle contractures, and to that only.

There is considerable muscular atrophy, more or less uniform, all over the body, and no one group of muscles seems much more involved than another. Measurements, however, show that the atrophy is more marked on the right side than the left, the circumference of the right upper and lower arm each measuring half an inch less than the left, and the right thigh an inch less than the left thigh. The circumference of both calves are the same, but the right deltoid shows more wasting than the left. Associated with this atrophy is an increase in the tonicity of the muscle fibres all over the body, as shown by their ready response to mechanical stimulus. The tendon reflexes, however, are not increased. Indeed, no response is obtained on tapping the patellar tendon or the tendo Achillis, and only a slight response with the biceps and triceps tendon reflexes. But on tapping the muscles to which these tendons are attached, *i.e.*, extensors of the knee, calf muscles, biceps, and triceps, a contraction in the muscle fibres is readily obtained. On stimulating the plantar surface there is a movement in the feet and legs, but none in the toes, either flexor or extensor.

The contraction of the adductors of the humerus has been noted, but this is equally marked in the flexors of the knee. When the patient is lying down the knees cannot be fully

extended, and when attempt is made to do so the tension of the flexors of the knee is extreme. When the patient sits up, the knees cannot be extended beyond a right angle, and when one tries to extend the leg forcibly the patient is forced to lie down on his back so as to lessen the tension on the flexors of the knee. The movements at the knees and hip-joints are otherwise quite free. There is also some slight stiffness at the ankle-joints, probably also due to rigidity of muscles. There is no evidence whatever of paralysis of muscles, for the movements of the hands and arms are well performed (excepting for the limits already mentioned), and the patient walks quite well, though the gait is slow and feeble. The movements of the tongue and of swallowing are normal. There is no atrophy of the tongue. Sensation all over the body is quite acute. Complaint is made of pain in the small of the back, and in the neck when one tries to move the head; but there are no symptoms suggestive of pressure on the sensory roots. Vision is less acute than formerly, but the ocular reflexes are active.

The skin all over the body seems thin and loose, and has a uniform light brown tint; the patient says his skin is much darker in colour than formerly. There are no patches of leucoderma, and no undue tendency to perspiration. There are no subcutaneous nodules.

There is no palpitation or dyspnoea: the pulse-rate is about 80 per minute. The radials are tortuous and thickened, and the tension is low. The cardiac area is not enlarged, and the heart sounds are normal. No definite dulness is obtained in percussion over the lungs, but some ill-defined râles are to be heard, especially over the right upper lobe. The breath sounds are not definitely altered, but auscultation is unsatisfactory on account of the limited movement of the chest and the difficulty the patient has of taking a long breath. Blood has been noted once or twice in the spit, and tubercle bacilli were found on microscopic examination. Examination by the x-rays suggests some infiltration into the lungs. There seems little doubt, therefore, that there is a chronic tuberculous process involving both lungs.

The digestive system seems quite normal. The appetite is good, the bowels regular, and there is no appearance of indigestion. The liver is not enlarged, neither can the spleen be felt under the costal margin. The urine is acid in reaction, has a specific gravity of 1020, and contains a trace of albumen. There is no sugar, blood, or pus. No casts could be found on microscopic examination.

During the six weeks which have elapsed since admission the patient's condition has remained practically unchanged. During that time the temperature has rarely been above normal, and the pulse has ranged from 80 to 104, the average being about 90. Occasionally a trace of albumen is found in the urine, but a week or more may pass when no albumen whatever can be detected.

There seems little doubt, then, that we have here an ankylosis of the vertebræ of the whole spinal column, and that it is a bony ankylosis seems clear from the skiagrams taken by Dr. Riddell (Figs. 4 and 5). He reports that "the vertebral column in this case differs from the normal, in that it shows dense bone in the substance of the intervertebral discs." But as to the nature or pathogenesis of the condition, there may be considerable difference of opinion. Some 200 similar cases, *i.e.*, cases with rigidity of the spine, have been put on record; but in less than 20 of these was there an autopsy. There are, however, in addition, records of some 30 museum specimens, but these are without clinical data. The following names under which the cases have been described, give some indication of the views regarding their nature, *viz.*, arthritis ossificans, stiffness of the spine, spondylosis, spondylose rhizomelique, osteo-arthritis of the spine, arthritis deformans of the spine, rheumatoid arthritis, chronic rheumatism of the spine, heredo-traumatic kyphosis, von Bechterew's disease, Kümmel's disease, Marie-Strümpell disease.

The case just recorded I regard as one of rheumatoid arthritis with the disease affecting almost entirely the vertebral joints. In no other disease that I know of does one have the same grouping of symptoms that are present here. The generalised muscular atrophy, the fibrillary responses to mechanical stimulus, the contractures of muscles, the thin pigmented skin—all associated with the ankylosis of joints, are very characteristic of rheumatoid arthritis. But the question arises, Are all cases of ankylosis of the spine to be classed as cases of rheumatoid arthritis? The answer must at present remain uncertain, for with so few autopsies, and most of these showing only the latest stages of the disease, it is difficult to define the relationship of the several cases to each other, or to understand the pathological process that has been at work in any of them. Considered from the clinical standpoint, the answer is equally difficult, for the cases recorded show considerable variation in their symptomatology and (apparent) etiology. In most of the cases pain in some part of

the back was an early symptom. The vertebral column would then get gradually stiffer, the pain usually lessening as the rigidity became complete. In some cases the joints of the limbs were also affected; and in some, nervous symptoms were prominent. For convenience the cases might be roughly divided into four groups.

The *first* includes cases of undoubted *rheumatoid arthritis* (osteo-arthritis, arthritis deformans). In this group are the cases with nervous symptoms, such as muscle atrophy, rigidity, contractures, fibrillary twitchings, sensory disturbance; also cases showing osteophytic deformity in some of the joints of the limbs. In these cases the onset of the symptoms is usually gradual, and, while the spine is sometimes first affected, it is more common for the disease to first appear in one of the larger joints of the limbs. *Post-mortem*, the spinal ligaments are found ossified, and frequently considerable osteophytic outgrowths round the articulations of the ribs and from the anterior surfaces of the bodies of the vertebræ. Sometimes the osteophytes encroach on the intervertebral foramina, and so cause pressure on the nerve roots.

In the *second* group are cases in which there have been one or more attacks of acute rheumatism. Subsequent to this the spine begins to stiffen, and ultimately may become quite rigid. In many of the cases there is permanent deformity in some of the joints of the limbs, but more often any ankylosis there is is fibrous rather than bony. Muscle atrophy and contractures are not such prominent symptoms as in the last group. There are no osteophytes, but ossification of the ligaments and of the joints of the articular processes of the spine. In this group may be placed cases where the onset of the spinal symptoms are subsequent to an attack of gonorrhœa, and one may also include here the Marie-Strümpell cases (spondylose rhizomyélique).

In the *third* group are the cases which seem to have had a traumatic origin, though the tendency to develop ankylosis after trauma would seem to run in families. Hence the name, "cyphose hereditraumatique," sometimes called "rigidité vertébral de Bechterew." Here the spine only is affected, the peripheral joints remaining intact unless injured in the trauma. In some of these cases there is a history of a fall on the shoulder, the buttocks, or the feet; but there is no evidence of direct injury to the spine, and examination shows no tenderness over the vertebral spines or nerve roots, and no angularity. After a few days in bed the patient may be going about again, feeling fairly well. Some weeks later, however, the

back becomes stiff, and this goes on till the whole vertebral column is firmly ankylosed. In these cases there is usually some kyphosis, but not so marked as in the rheumatic cases. Sometimes the trauma has been direct on to the back, and there is then no period of absence of symptoms. Examination, too, may show a prominence of some part of the spine, and very often tenderness. These last are those called by the name "*maladie de Kümmel*." *Post-mortem*, the cases of this group show ossification in some of the intervertebral discs, ankylosis of the articular processes and of the heads of the ribs. There is frequently, too, ossification of the ligamenta flava and other ligaments.

The *fourth* group would include certain cases occurring almost entirely in old people whose occupation requires a stooping posture. It is usually only the cervical and upper dorsal regions of the spine that are affected, and at the *post-mortem* examinations the articular surfaces are found intact, the ankylosis being produced by bony plates, placed laterally, and thus joining the bodies of the vertebræ one to another. These plates rarely extend forwards to the middle line, or backwards to the intervertebral foramina. Such cases attract little attention during life, and the ankylosis is most often discovered in the anatomical or pathological department.

It will thus be seen that the various cases of ankylosis of the spine may differ somewhat clinically. Anatomically, too, there are differences in the manner in which this ankylosis is effected. In some cases only the bodies of the vertebræ are ankylosed, while in others it is the articular processes and ligaments that are chiefly implicated. In the former cases the bodies may be united in several different ways. Sometimes the bodies are fused to each other by ossification through the intervertebral discs, the cancellous bone of one body being continuous (through the intervening disc) with the cancellous bone of the adjacent body, just as one meets with it in the sacrum. Sometimes, again, the bodies are united by bridges of bone spanning over the intervening disc. These bridges may be derived from the margins of adjoining bodies fusing with each other outside the disc, or they may be composed of separate plates of bone soldered on to the lateral and anterior aspects of the adjoining bodies. Sometimes in these cases, too, the discs are also ossified but quite separate from the bodies, the bony disc being limited above and below by thin dense laminae, just as the bodies are.

When the ankylosis confines itself chiefly to the neural arches, then we have the articular processes firmly united



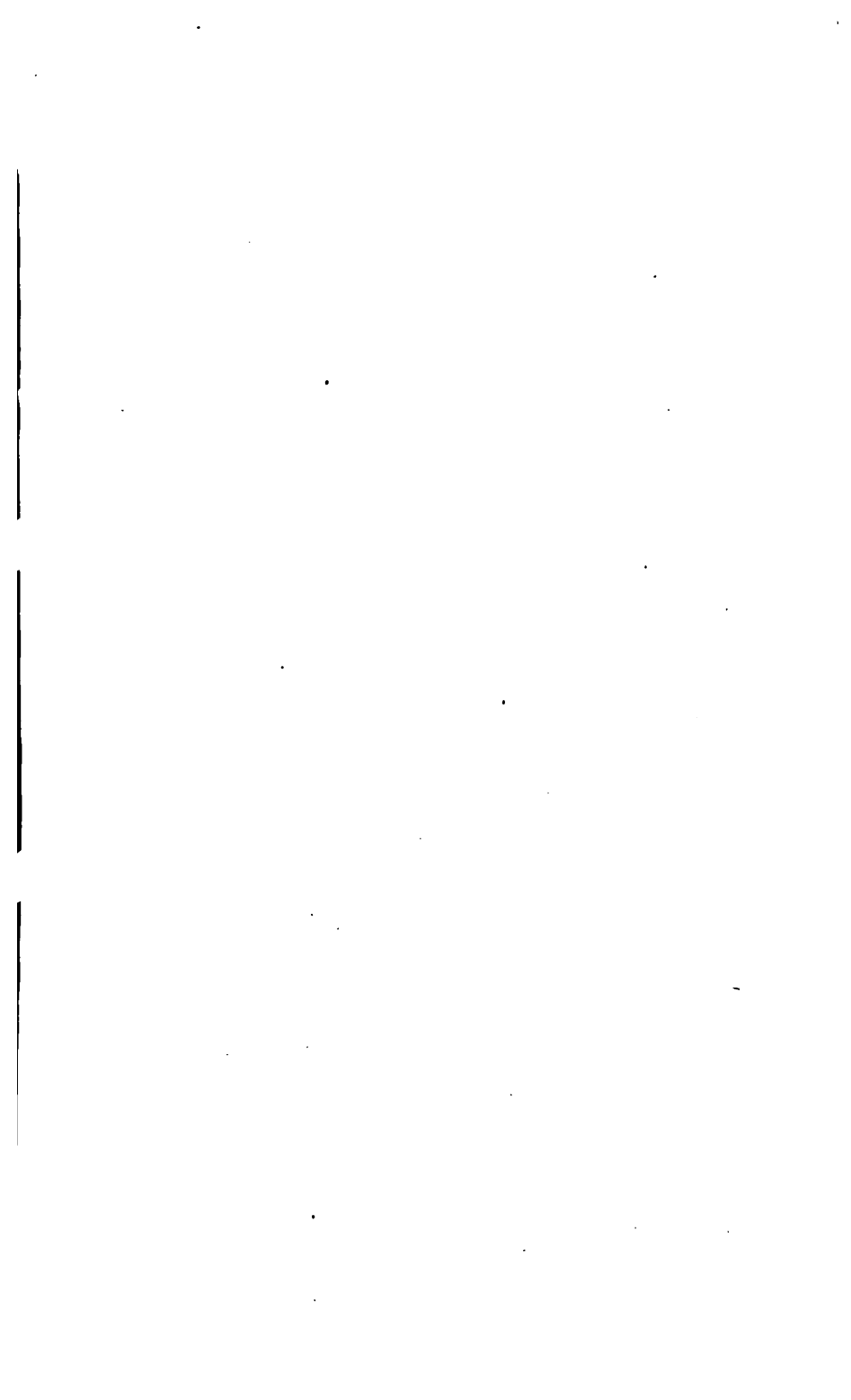
FIG. 1.



FIG. 2



FIG. 3.





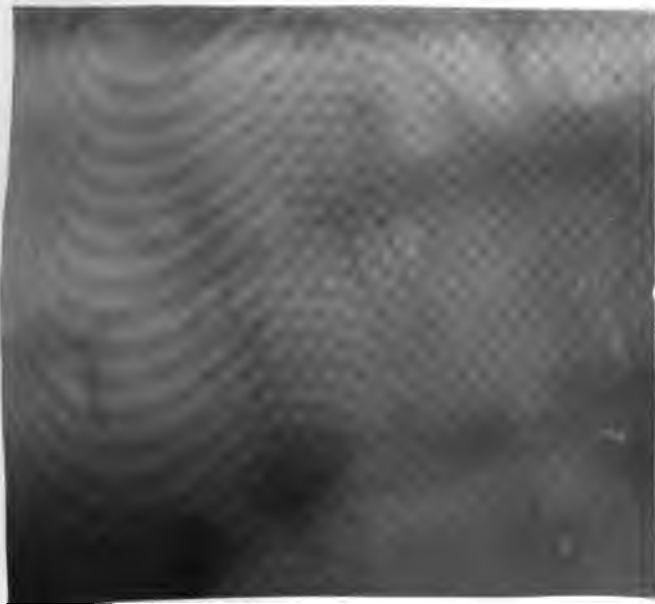


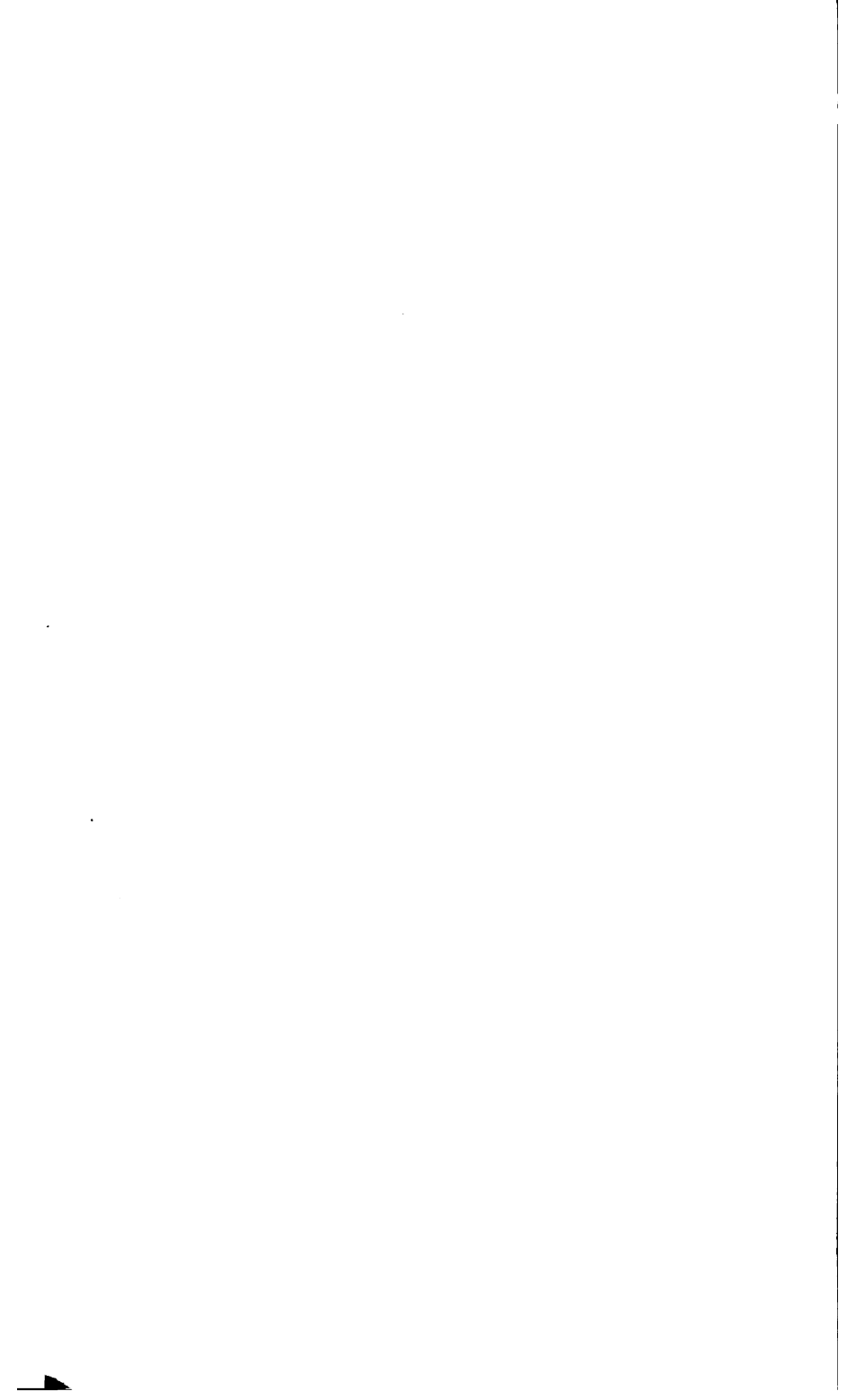
FIG. 4.

Skiagram from upper dorsal region, showing dark line of ossification in the intervertebral discs. (*Dr. Riddell.*)



FIG. 5.

Skiagram similar to Fig. 4, the negative "touched up" to show more distinctly the ossification of the intervertebral discs. (*Dr. Riddell.*)



much as regards the pathogenesis of the condition. It has not yet been established that rheumatoid arthritis is a specific disease. That the chronic arthritis is due to some irritant, and that this comes by the blood, seems reasonable; but that this is always the same irritant, the product of the same micro-organism, cannot certainly be affirmed. There may quite well be several toxic substances any of which might produce a multiple arthritis. The toxin of gonorrhœa might be one of these; and Poncet, insisting on the frequent association of chronic tuberculosis and rheumatoid arthritis, suggests that the arthritis may depend on toxins produced in the lungs by the tubercle bacilli growing there. In other words, he regards rheumatoid arthritis as a paratuberculous inflammation, as having a toxic origin; and that wet, cold, trauma, &c., are only occasional causes, rather predisposing and localising than the real exciting cause. The presence of trophic disturbances so frequently met with in rheumatoid arthritis in the form of muscle atrophy and hypertonicity, disturbances in the nutrition and pigmentation of the skin, vasomotor disturbances, all suggest a toxin with a widespread action on certain trophic centres. It has, I know, been said that these trophic disorders depend on disturbing afferent impulses coming from the inflamed joints to the trophic centres in the cord, and that section of the posterior roots prevents the development of the muscle atrophies. This is doubtless so, but it has been maintained, on the other hand, that the muscle atrophy may precede the joint lesions rather than come secondary to them, and that while the joint lesion is sometimes unilateral, the atrophy may be bilateral and widespread. This favours the view that the joint lesion and trophic disturbances of muscle and skin are due to the same cause, rather than that the latter is dependent on the former.

These, however, are questions requiring careful study, and I should like to take this opportunity of emphasising the importance of a careful and exhaustive examination, not only of the joints, but also of the cord and peripheral nerves, when anyone has the fortune to examine *post-mortem* a case of rheumatoid arthritis.

the examination; and he knew that by paying a little more he could get his diploma sent after him. Dickson remained to take his degree, as he regarded the additional guineas much more than he feared the examination."

At this point I leave this rough sketch, and I am only too conscious of the inadequacy of the picture I have presented. I have attempted to draw it in a humble spirit, not ridiculing ignorance, but only the presumption which tries to conceal its ignorance. The period was possibly dark, but it still had men like Sydenham and Pitcairn to carry the torch, and hand it on to Smellie, and Cullen, the Hunters, the Gregories, and the Monros; and as Murdoch gave us light in the material sense, so these great Scotsmen, by the brilliance of their genius, illumined many dark places in science and threw the beams of their light over all the civilised world.

CASE OF PERFORATION OF JEJUNAL ULCER SEVEN YEARS AFTER GASTRO-JEJUNOSTOMY.¹

By GEO. H. EDINGTON, M.D.,

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THAT the operation of gastro-jejunostomy, whether done in cases of pyloric obstruction due to cicatrisation of an ulcer or to malignant disease, or for the relief of symptoms of gastric ulcer, gives, as a rule, good *immediate* results is well known. The excellence of these results has led to the great popularity of the operation, a popularity which is evidenced by the large numbers of cases which continue to be published. The *late* results, however, are sometimes disappointing, and it is to one of these that I wish to draw attention. I refer to what has been called "peptic ulcer of the jejunum."

I had recently the opportunity of operating on the case which forms the subject of the present communication. For permission to record this case I have to thank Dr. Dalziel, into whose wards in the Western Infirmary the patient had been admitted. The particulars are as follows:—

¹ Specimen shown at a meeting of the Glasgow Pathological and Clinical Society held on 14th January, 1907.

Summary.—*Gastro-jejunostomy for pyloric stenosis—Nearly five years later, cholecystotomy and removal of gall-stone—Over seven years after gastro-jejunostomy, perforation of jejunal ulcer—Laparotomy twenty-seven hours later—Death.*

Joseph G., aged 46, checkweigher, was admitted on 10th November, 1906, to Ward XIX of the Western Infirmary on account of acute peritonitis, for which immediate laparotomy was performed. The following details of previous history were afterwards extracted from the Ward Journals, and are in chronological order.

Past history.—In September, 1899, he was admitted to the hospital on account of dilated stomach. He had suffered from epigastric pain coming on several hours after food, and from sour regurgitation for three months before admission to hospital, and he had been treated by lavage. The stomach was markedly dilated, the greater curvature reaching to an inch and a half below the umbilicus. Dr. Dalziel performed laparotomy. Pyloroplasty was not practicable on account of inflammatory matting round about the pylorus, and simple anterior gastro-jejunostomy was done. After uneventful recovery he remained well till the end of July, 1904, when he was re-admitted with a history of persistent vomiting of two weeks' duration, accompanied by severe pain in the right hypochondrium. The gall-bladder was found to be distended. The abdomen was opened over the gall-bladder, and cholecystotomy and extraction of stone from the cystic duct was done. There was a collection of pus in the cystic duct beyond the stone. He was discharged in the beginning of September well, and remained so till 9th November, 1906. At 4 A.M. on this date he felt epigastric pain. Notwithstanding, he proceeded to his work as checkweigher at the pithead, and continued there till 5 P.M., when the pain became suddenly much worse. He was sent into hospital at 6 P.M. on the following day (10th November, 1906).

When I saw him, shortly after admission, he was very ill and somewhat collapsed; pulse, 140; temperature, 102·8° F. The upper half of the abdomen was distended, and the hepatic dulness was replaced by a tympanitic note. A diagnosis was made of perforated gastric ulcer, and laparotomy was performed through the scar (median) of the first operation. When the peritoneum was opened, gas whistled out, and was followed by a flow of muddy fluid. Fluid and gas were issuing from a rounded, punched-out opening, about a quarter of an inch (0·6 cm.) in diameter, on the anterior surface of the

Urwick¹ examined 20 healthy cases, and agreed with Bulloch as to the limit being 0·8 and 1·2. His average was 1·006.

Lawson and Stewart (*op. cit.*) examined 25 healthy cases, and found the limits to be from 0·9 to 1·2, except in 1 case which gave an index of 1·4. In no case did they get a healthy index as low as 0·8. The average was 1·0.

I have tested the opsonic indices of 41 healthy persons, and have arranged the results in the following table:—

TABLE I.—TUBERCULO-OPSONIC POWER OF THE BLOOD IN FORTY-ONE HEALTHY PERSONS.

No.	Initials.	Opsonic Index.	No.	Initials.	Opsonic Index.	No.	Initials.	Opsonic Index.
1	D. T.	1·2	15	G. M.	1·00	29	D. M'C.	0·90
2	D. C.	1·1	16	M. B.	1·00	30	D. M'G.	0·90
3	M. R.	1·1	17	D. N.	1·00	31	D. S.	0·90
4	P. F.	1·1	18	J. S.	1·00	32	R. K.	0·90
5	C. D.	1·1	19	A. H.	1·00	33	T. M.	0·90
6	M. H.	1·1	20	A. T.	1·00	34	J. M'C.	0·90
7	O. S.	1·1	21	A. F.	1·00	35	J. D.	0·89
8	A. F.	1·09	22	J. F.	1·00	36	J. R.	0·89
9	J. M'F.	1·09	23	M. M'C.	1·00	37	J. G.	0·85
10	M. B.	1·07	24	M. J. R.	1·00	38	W. A.	0·84
11	D. T. F.	1·05	25	J. R.	0·96	39	B. R.	0·84
12	J. L.	1·05	26	D. H.	0·93	40	P. L.	0·80
13	J. L. T.	1·00	27	J. Y.	0·92	41	W. F.	0·80
14	D. D.	1·00	28	M. F.	0·91			

The average in this series is 0·98. The variation is from 0·8 to 1·2, as in Bulloch's cases. In no healthy person have I found an index beyond these limits.

The question as to whether the index of a healthy person varies at all from time to time is also of considerable importance when we attempt to get a standard for comparing the indices of the healthy with the indices of the diseased. Urwick (*op. cit.*) has investigated this point, and he states that "the opsonic power of healthy people varies very slightly, or not at all, from day to day." On the other hand, Dr. G. G. Ellett² has taken the opsonic index of the blood of men training for a boat race, with a view to discovering the effect of bodily exertion on the opsonic index of healthy persons, and he states that after hard rowing the index is lowered.

¹ Urwick, "Observations on the opsonic power of people suffering from tuberculosis," *British Medical Journal*, 22nd July, 1905.

² G. G. Ellett, "A note on the effect of bodily exertion on the opsonic index of healthy persons," *British Medical Journal*, 21st July, 1906.

His report, however, includes only two cases, and, therefore, does not justify any conclusion.

In three of my healthy cases I made repeated examinations of the blood on different days and found the variation to be practically the same as the variation got between the indices of different healthy people examined on the same day. I am inclined to believe that, although there may be a slight variation in the level of the index in different healthy individuals, and that although there may also be a variation within certain limits in the level of the index of a single healthy individual at different times, these figures do not accurately represent it. This fluctuation probably represents the varying "personal equation," rather than an exact variation in the opsonic content of the blood. However, this is an element that must be reckoned with in any case, for it is evident that when one is dealing with such minute quantities as require to be measured, and with such sustained eye-strain as is necessary for the estimations, something will certainly depend on the steadiness of one's hand and the acuteness of one's eyesight. But, whether these limits of 0·8 to 1·2 are taken as circumscribing the field of the healthy opsonic index or as bounding the fallibility of the operator, it is at least noteworthy that, as far as present observation goes, there *are* such limits, and that in the series of 152 reported cases there is no instance of a healthy blood giving an index beyond this range.

TABLE II.—SHOWING THE VARIATION IN THE OPSONIC INDEX OF THE BLOOD OF HEALTHY PERSONS ON A SUCCESSION OF DAYS.

No.	Initials.	Opsonic Indices.									
1	J. A. C.	1·10	1·03	1·00	0·88	0·90	1·00	1·00	0·90	1·00	0·92
2	D. M'C.	0·90	1·20	1·00	1·10	1·20	0·85	0·92	0·97		
3	R. K.	0·90	0·90	1·06	0·92	1·09					

2. *Does the tuberculo-opsonic index in diseased persons, other than tuberculous patients, correspond with that found in healthy individuals? Or does the presence of a diseased condition, or of an infection due to another micro-organism, alter the opsonic index of the blood to the tubercle bacillus?*

This is a subject on which, up to the present time, clinical evidence is lacking. Some valuable experimental work has

recently been done by Bulloch and Western¹ on the "specificity of opsonins," and they have found that when a micro-organism is brought into contact with normal human serum, and digested for one hour at 37° C., the serum loses its opsonic power for that particular micro-organism, but keeps its opsonic power for other micro-organisms practically intact. Applying this clinically, *e.g.*, to a case of typhoid fever, one might expect to find that the quantity of tuberculo-opsonin in the blood would not be diminished by the presence of the bacillus typhosus. However, there is the further question to deal with—Does a condition of disease in the body not interfere with the production of tuberculo-opsonin? In the abnormal conditions prevailing in the body of the typhoid patient is the production of tuberculo-opsonin normal? The same question may be asked in the case of any disease at all. For instance, one might very reasonably ask, in the case of advanced malignant disease, whether, in the condition of anæmia and cachexia produced, the tuberculo-opsonic substance remains unaltered.

These are questions of great importance in deciding on the diagnostic value of the opsonic index; if an abnormal index may mean either tuberculosis or some other disease, then manifestly its value is reduced to something infinitesimal.

With a view to elucidating this subject, I have examined the tuberculo-opsonic index of the blood in 43 cases of disease definitely non-tubercular. The first 23 cases were taken at random in the hospital wards; the remaining cases were selected as being more likely to yield a positive result.

There are certain diseases which are generally recognised as "predisposing" to tuberculosis; of these I chose measles, whooping-cough, pneumonia, and diabetes, with the object of discovering whether the index was altered in any way.

From Table III it will be seen that in the non-selected cases the index was, without exception, within the normal limits. In the selected cases, however, while the majority were found to be normal, there were a few instances of indices which were definitely abnormal. In my 4 cases convalescent from measles—a disease well known to be the frequent precursor of tubercular disease in children—the index was normal. In the 5 cases of *whooping-cough*, however, there is 1 quite marked exception with an index of 1.5. There was no evidence of tubercular infection about the child; she was convalescent, and looked fairly healthy. Had the index been low it might have been explained as the factor in whooping-cough which

¹ Bulloch and Western, "The specificity of the opsonic substances in the blood serum," *Proceedings of the Royal Society*, 1906, vol. lxxvii.

TABLE III.—TUBERCULO-OPSONIC POWER OF THE BLOOD IN FORTY-THREE PERSONS SUFFERING FROM DISEASE OTHER THAN TUBERCULOSIS.

No.	Initials.	Disease.	Tuberculo-opsonic Index.			
1	M. H.	Anæmia, ...	1.00	0.94	1.10	
2	M. F.	Emphysema and bronchitis, ...	1.00			
3	C. K.	Pleurisy (pneumococcal), ...	0.80	0.80		
4	M. G.	Cystitis (bacillus coli), ...	1.10			
5	B. R.	Injury to hip-joint, ...	0.84	1.16		
6	J. R.	Acute rheumatism, ...	0.89			
7	J. S.	Gastritis, emaciation, &c., ...	1.10	1.00		
8	M. M'C.	Acute suppuration, ...	1.00			
9	B. G.	Sarcoma, ...	0.81			
10	J. M'F.	Abscess (staphylococcus), ...	1.09			
11	O. S.	After amputation of arm for accident, ...	1.10			
12	J. G.	Fractured femur, ...	0.85			
13	W. A.	Injuries from accident.	0.84			
14	M. M.	Malignant disease of bowel, ...	0.90			
15	A. C.	Enteric fever, ...	0.90			
16	P. G.	Enteric fever, ...	0.90			
17	A. K.	Osteomyelitis, ...	1.15			
18	J. S.	Malignant disease of stomach, ...	1.10	1.20	0.90	0.90
19	B. M'C.	Cerebro-spinal meningitis, ...	1.20			
20	W. C.	Osteomyelitis (radius), ...	1.20			
21	J. S.	Osteomyelitis (tibia), ...	0.80			
22	M. S.	Fistula in ano (non-tubercular), ...	0.80			
23	A. Y.	Rickets, ...	0.92			
24	A. M.	Pneumonia (eighth day), ...	0.85			
25	J. H.	Pneumonia (sixth day), ...	1.10			
26	A. C.	Pneumonia (nine days after crisis; very well), ...	0.90			
27	A. B.	Pneumonia (seven days after crisis; very well), ...	0.66	0.60*		
28	A. M'L.	Pneumonia (three weeks after crisis), ...	0.94			
29	G. K.	Pneumonia (eleventh day; temperature remaining up. Proved tubercular later on), ...	0.57*			
30	J. J.	Diabetes (doing well), ...	0.67*			
31	T. W.	Diabetes, ...	1.20			
32	W. B.	Diabetes, ...	0.83			
33	J. B.	Diabetes, ...	0.84			
34	P. M'L.	Diabetes, ...	0.69*			
35	J. S.	Measles (convalescent), ...	1.00			
36	S. S.	Measles (convalescent), ...	1.03			
37	A. T.	Measles (convalescent), ...	1.20			
38	M. M.	Measles (convalescent), ...	0.88			
39	M. C.	Whooping-cough (convalescent), ...	1.00			
40	J. H.	Whooping-cough, ...	1.17			
41	R. W.	Whooping-cough, ...	0.90			
42	W. B.	Whooping-cough, ...	1.20			
43	S. G.	Whooping-cough (convalescent), ...	1.50*			

* Cases in which the index was found beyond the normal limits.

predisposes to tuberculosis, but, as it stands, it is difficult to explain on any of the theories which have so far been set forth.

Pneumonia was taken as another example of a disease which, in the opinion of some authorities, may predispose to tuberculosis. Of the 6 cases recorded, 4 gave a normal index and 3 an abnormal. The case of G. K. is specially interesting; he had had pneumonia, and about the eleventh day, as the temperature remained high, I was asked to examine the opsonic index. This was found to be 0.57; tubercular infection was therefore suspected, and was confirmed within a few weeks by the clinical course of the case. The other case, J. B., had had his crisis seven days previously, and was doing well; there was no evidence of tubercular infection.

Diabetes was the next disease chosen for examination, on account of the fact that tuberculosis is known to be the terminal event in quite a large proportion of the cases. The blood of 5 different patients was examined; in 3 cases the index was normal; in 2 it was subnormal. Case 30, J. J., was able to be about, and was apparently doing well. P. M'L, Case 34, was confined to bed, and appeared to be going steadily downhill, but there was no definite indication of tubercular disease.

I do not attempt to draw any deductions from these abnormal indices; I merely record them for the purpose of showing that such an index may be got in a patient who is suffering from a disease other than tuberculosis.

In my enquiry as to whether an abnormal tuberculo-opsonic index was ever observed in people who were not infected with

TABLE IV.—TUBERCULO-OPSONIC POWER OF THE BLOOD IN NINE HEALTHY MEMBERS OF SO-CALLED "TUBERCULAR FAMILIES."

No.	Initials.	Tuberculo-opsonic Index.	
		First Observation.	Second Observation.
1	D. D.	1.00	1.07
2	A. B.	1.00	...
3	C. B.	1.10	...
4	B. R.	0.84	1.16
5	W. B.	0.80	...
6	A. F.	1.09	...
7	J. L.	1.00	...
8	M. M.	0.91	...
9	D. R.	1.00	...

tubercle, it occurred to me that in the case of members of so-called "tubercular families"—who are commonly believed to be "predisposed" to tuberculosis—some alteration in the index might be found. I therefore examined the blood of 9 such people, and the result is given in Table IV.

A much larger body of evidence is necessary before any definite statement can be made on the question, but in the 9 cases examined it is noteworthy that there is no instance of an index beyond the normal limits. In at least 8 of the cases the family history was very markedly tubercular; in the ninth case the so-called "predisposition" was less well-marked.

3. *The next question is—What level of opsonic-index is found in cases where tubercular infection is known to be present?*

Wright's earliest investigations^{1 2} led him to believe that the index was low in cases of tubercular disease; in seventeen cases reported the indices ranged from 0·4 to 0·85. His later work,^{3 4 5} however, has shown that this does not hold good in all cases, and in his most recent contribution on this subject he makes a classification of tubercular cases into (1) "strictly localised cases" and (2) "cases which are associated with constitutional disturbance."

Into Class 1 he puts "cases where the infection is limited to one or more lymphatic glands, most cases of lupus, most cases of tubercular abscess in the subcutaneous tissue, tubercular affections of the joints, and, lastly, many stationary or only slowly progressing cases of tubercular phthisis."

Class 2 includes "patients who are suffering from more generalised tubercular infections associated with constitutional disturbance. This group consists in large part of cases of pyrexial pulmonary tuberculosis."

¹ Wright and Douglas, "An experimental investigation of the rôle of the blood fluids in connection with phagocytosis," *Proceedings of the Royal Society*, 1903, vol. lxxii.

² Wright and Douglas, "Further observations on the rôle of the blood fluids in connection with phagocytosis," *Proceedings of the Royal Society*, 1903, vol. lxxiii.

³ *Loc. cit.*

⁴ Wright and Douglas, "On the action exerted upon the tubercle bacillus by human blood fluids, and on the elaboration of protective elements in the human organism in response to inoculations of a tubercle vaccine," *Proceedings of the Royal Society*, 1904, vol. lxxiv.

⁵ Wright, "A lecture on the inoculation treatment of tuberculosis," *Clinical Journal*, 9th November, 1904.

In Class 1 he states that "the index is low, and uniformly low." In a series of 31 cases the index ranged from 0·13 to 0·88; in no case did it reach above the latter figure.

In Class 2—the class associated with constitutional disturbance—he finds a continually varying index. The range of its fluctuation is from considerably under the normal to twice or more the normal height."

Urwick¹ has reported on the opsonic power of the blood in 54 cases of people suffering from various tubercular infections; 5 of these are lupus, 16 are cases of general surgical tuberculosis, and 33 are cases of phthisis. Generally speaking, his results are in harmony with the conclusions of Wright. In 1 case of lupus, however, he records an index of 1·9.

Bulloch² has investigated the opsonic indices of 150 patients

TABLE V.—TUBERCULO-OPSONIC POWER OF THE BLOOD IN NINETY-ONE PATIENTS SUFFERING FROM TUBERCULAR DISEASE.

No.	Initials.	Disease.	Tuberculo-opsonic Index.
1	S. L.	Tubercular knee, ...	1·20 1·28
2	M. P.	Tubercular peritonitis, ...	1·60
3	F. L.	Tubercular glands in neck and in both axillæ, ...	0·50 1·40 0·90 0·60 0·60 0·96 0·78
4	L. W.	Tubercular metacarpals, ...	1·10
5	M. H.	Tubercular pyonephrosis, ...	1·90 0·60 (4 days after operation).
6	W. B.	Tubercular sinuses in thigh, ...	0·63 0·70
7	T. J.	Tubercular wrist which has been excised, ...	0·90 0·90
8	D. O.	Tubercular disease of the spine, ...	0·98 1·10 0·84 1·30 1·60
9	R. B.	Tubercular glands in neck; removed one week ago, ...	1·60 1·60
10	J. H.	Multiple tuberculosis, ...	0·60 0·60
11	M. G.	Tubercular pyelitis, ...	0·57 1·50
12	B. M.	Tubercular peritonitis (doing well), ...	1·60 1·43 1·20 1·30
13	D. S.	Tubercular sacro-iliac disease; operated on; now discharging sinus, ...	0·60 0·60
14	R. M.	Tubercular elbow, ...	1·60 0·48
15	F. M.	Double osteomyelitis (tubercular), ...	1·06 1·2 0·44
16	N. M.	Tubercular peritonitis, ...	0·90 1·20 0·80 0·60 0·67
17	P. M'I.	Tubercular ankle, ...	1·10
18	T. M'R.	Phthisis (acute), ...	0·60 1·70 0·75
19	N. F.	Tubercular eyelid, ...	0·50
20	J. M'G.	Tubercular knee, ...	0·70 0·50
21	M. S.	Tubercular elbow, ...	0·50 0·69
22	P. D.	Tubercular ulceration of bowel, ...	0·80
23	N. B.	Tubercular hip (developed tubercular meningitis), ...	0·20 0·70
24	J. W.	Tubercular abscess, ...	1·10 1·70
25	J. C.	Tubercular hip-joint disease, ...	1·00 0·70
26	K. J.	Phthisis, ...	1·10 1·00
27	V. S.	Tubercular meningitis, ...	0·90
28	J. F.	Phthisis (sanatorium "cure"), ...	0·60
29	A. K.	Tubercular ankle, ...	0·70
30	B. G.	Phthisis (day after parturition), ...	1·25
31	R. M'C.	Pleurisy with effusion (no tubercle bacilli in effusion, but tubercle in sputum, ...	0·30
32	P. D.	Tubercular tarsus and thumb, ...	1·20 1·10 1·10 1·20

¹ Urwick, *loc. cit.*

² Bulloch, *loc. cit.*

TABLE V (continued).—TUBERCULO-OPSONIC POWER OF THE BLOOD IN NINETY-ONE PATIENTS SUFFERING FROM TUBERCULAR DISEASE.

No.	Initials.	Disease.	Tuberculo-opsonic Index.
33	C. M.	Tubercular peritonitis (duration, six weeks, ...)	2.40
34	G. M.	Tubercular hip-joint, ...	1.50 1.40 1.10
35	D. N.	Tubercular clavicle, ...	1.20 0.40
36	J. D.	Tubercular elbow, ...	0.90
37	R. G.	Tubercular hip-joint disease (duration, six weeks), ...	0.66 1.00
38	D. M'G.	Tubercular ankle, ...	0.50 0.90
39	J. O'N.	Tubercular peritonitis, ...	0.70
40	T. L.	Tubercular glands in neck, ...	1.00
41	R. C.	Tubercular glands in neck, ...	0.36
42	W. W.	Tubercular spine, ...	0.60
43	P. G.	Tubercular hip-joint disease (nine months' duration), ...	0.60 0.86
44	N. C.	Tubercular hip with abscess, ...	0.40
45	J. B.	Tubercular tibia, ...	0.50 1.20 0.90
46	K. D.	Scrofuloderma, ...	0.70 0.94
47	J. K.	Tubercular laryngitis (several years' duration), ...	1.00 1.08
48	A. M'G.	Phthisis (early), ...	0.80 0.92
49	R. B.	Phthisis, ...	1.20 1.10
50	M. N.	Cerebral tumour (tubercular), ...	0.57 0.60 1.30 1.04
51	J. L.	Tubercular osteomyelitis, ...	1.10 0.04 0.33
52	M. B.	Tubercular pleurisy, ...	1.54
53	M. F.	Lupus of nose, ...	0.47
54	J. T.	Scrofuloderma (twenty years' duration), ...	0.50
55	G. R.	Phthisis, ...	0.90
56	J. R.	Phthisis (acute), ...	0.80
57	A. D.	Tubercular ulcer of bowel; diagnosed at operation, ...	0.60 0.70
58	J. M'E.	Psoas abscess, ...	0.43
59	D. B.	Tubercular foot, ...	0.86 1.00
60	V. C.	Psoas abscess, ...	0.65 0.80
61	J. M'I.	Phthisis (early), with hæmoptysis, ...	1.20
62	H. S.	Phthisis (ten months' duration), ...	1.23
63	J. C.	Phthisis (early), ...	0.78
64	M. B.	Tubercular meningitis, ...	1.50
65	P. M'L.	Tubercular peritonitis, ...	0.80
66	M. K.	Lupus and pneumonia, ...	1.40
67	J. L.	Pleurisy (recovering; tubercle bacilli in sputum), ...	1.00
68	M. S.	Tubercular laryngitis, ...	0.90 1.08
69	L. R.	Tubercular cervical glands, ...	1.60 1.30
70	M. G.	Phthisis with empyema, ...	0.78
71	M. C.	Tubercular ankle (duration, one year), ...	0.78
72	D. B.	Tubercular peritonitis (cured), ...	0.77
73	J. D.	Tubercular hip-joint (no constitutional disturbance), ...	1.70
74	M. M'K.	Tubercular peritonitis, ...	1.20 1.40
75	A. S.	Tubercular meningitis, ...	1.50 1.08 (almost comatose; just before death).
76	R. W.	Tubercular pleurisy, ...	0.65
77	A. C.	Tubercular peritonitis, ...	1.50 1.50
78	G. K.	Phthisis (acute), ...	0.57 1.20
79	J. B.	Osteomyelitis (tubercular), ...	0.95
80	J. F.	Lupus vulgaris, ...	0.73
81	J. S.	Pleurisy (tubercular), ...	1.04
82	W. G.	Phthisis, ...	1.30
83	K. H.	Pleurisy (tubercular), ...	1.60
84	M. P.	Phthisis (advanced), ...	0.67
85	B. D.	Phthisis (early), ...	0.90
86	A. N.	Tubercular cervical glands, ...	0.60
87	F. C.	Tubercular pleurisy, ...	1.20
88	M. Y.	Phthisis (very early), ...	0.50
89	M. S.	Tubercular peritonitis, ...	0.50
90	R. P.	Phthisis, ...	0.70
91	P. M.	Tubercular ulceration of bowel, ...	0.94

suffering from lupus, and his results do not altogether agree with those of Wright and Urwick. In 39 of the cases the index was 0·8 and upwards, as many as 14 having a range of from 1 to 1·4.

One striking point in the cases reported by these observers is the very large number of patients who are known to be tuberculous, and who yet have an opsonic index within the normal range, taking that to be from 0·8 to 1·2. In Bulloch's series 37 out of 150, in Urwick's series 13 out of 54, and in Wright's cases 7 out of 31 came within these limits. It would thus appear that in about one-fourth of the cases of tubercular infection the opsonic index (as far, at least, as one examination of it is concerned) gives no indication of the condition. My own experiments have led me to a similar conclusion. I have examined 91 cases where tubercular infection was undoubtedly present, and the results are given in Table V (pp. 202, 203).

I have endeavoured to arrange my cases according to Wright's¹ classification into strictly localised cases with a uniformly low index, and cases with general constitutional disturbance and a fluctuating index, but, so far, I have quite failed to do so. Many of the cases which yielded a normal index were examples of localised tuberculosis and had no constitutional disturbance, *e.g.*, cases 4, 7, 17, 40, 47, 59, and 68. Also, in some cases of strictly localised lesion, the index was considerably above normal, *e.g.*, cases 9,² 66, 69, and 73.

An analysis of the figures in Table V will show that in 58 out of the 91 cases the opsonic index is beyond the limits found in health; in 33 cases it is within these limits on the first examination. In a number of the cases in this latter category repeated examinations of the blood were made, in order to observe whether the index was stationary or fluctuating. Six of these cases yielded an abnormal index on second examination, and several others behaved similarly when the examinations were repeated four or five times, *e.g.*, D. O. (Case 8) was a child who had had tubercular disease of the vertebræ and a psoas abscess several years ago. He had now evidence of fresh tubercular mischief in the form of evening rise of temperature, night sweating, emaciation, &c., and his opsonic index was examined to see if it cast any light

¹ Wright, *loc. cit.*

² The case of R. B., however, was one where the tubercular lesion (cervical glands) had been excised one week before the first index was taken, and, as Wright has pointed out, and as I have observed independently, a considerable rise in the level of the opsonic index frequently follows operation on a tubercular focus.

on the diagnosis. At the first three examinations it was found to be normal (0.98, 1.1, and 0.84), and it was only at the fourth and fifth examinations that any abnormality in the index was evident.

In Case 16 no abnormality in the index appeared till the fourth examination, and in Case 32 four consecutive examinations yielded a normal index.

(To be continued.)

CASE OF "SPIDER'S LICK."

By D. H. MACPHAIL, M.B., CH.B.,
Late Senior Resident, Glasgow Royal Infirmary.

THE following case may be of sufficient interest for publication:—One morning, on the voyage from Calcutta to London, one of the saloon "boys," a native, came to me with an eruption on the left fore-arm. Two mornings previously he had been awakened by feeling something crawling on his arm. On looking, he saw a spider, which he immediately crushed against his arm with his other hand, and he then brushed the remains off. The following morning he noticed a distinct redness on this arm corresponding with the area in which he had killed the spider. The rash was slightly itchy. He took no more notice of it, however, till the next morning, when it had assumed a pustular character, and he came to me for treatment. On examination, the following points were noticed:—

On the left fore-arm, and occupying an area of several inches square, was a well-marked pustular eruption. The whole of the affected area was red and raised above the general surface; and dotted about this area were numerous small pustules, many coalescing, especially near the central parts, but isolated at the margins. There was no pain, and the itchiness had quite disappeared. There were no enlarged glands in the axilla, though there was some tenderness in that region. There were no constitutional symptoms.

I applied a 1 in 40 carbolic dressing over and beyond the affected area, and kept it on for twenty-four hours. At the end of this time the pustules had nearly all disappeared, their place being occupied by thin white scales. The redness had also almost gone. The dressing was repeated,

and by the following morning the whole eruption had entirely disappeared.

I believe this condition is known in India as "spider's lick," and I have been told that the eruption sometimes covers nearly the whole body. I have never seen any such case, however.

It is known that the delicate hairs of certain caterpillars, e.g., *Cnethocampa pinivora*, *Cnethocampa pithyocampa*, and *Cnethocampa processionea*, contain formic acid. Some investigators affirm, however, that the irritant is allied to cantharidin, and is contained also in the glands at the roots of the hairs. Dr. Livingstone mentions that the Bushmen of Africa use the entrails of a small caterpillar to poison their arrows. This poison produces delirium. It is probable that the hairs of certain spiders at their roots contain a poisonous substance allied to that of caterpillars, which would give rise to a cutaneous eruption such as I have described.

To me the case was very interesting, and the rapid response to treatment was equally gratifying.

NOTE ON FRACTURE OF A RIB BY SNEEZING.

By H. E. JONES, M.B., C.M., GLASGOW.

IN the *Glasgow Medical Journal* of February, 1904, I reported a case of rib fractured by whooping-cough in an elderly lady.

Another case of a rather unusual type has just come under my notice. About two months ago I was asked to see a young lady, of about 24 years of age, who sent for me in consequence of a severe pain in her left side. The pain was very acute, and almost unbearable when she gave a cough or took a long breath. The story was that she had that afternoon returned from a holiday, and, when walking up the steps from the subway platform, felt such a severe pain in her side that she was compelled to cry out. She had not received any blow or injury that she was aware of, neither had she been carrying anything heavy that could have caused injury. A short time previously, however, she had sneezed rather violently.

On physical examination I found the patient suffering from an attack of bronchial catarrh, with temperature, 98.8°; pulse, 104; respirations, 34. She complained much of pain at a spot about the middle of the left tenth rib. This spot

was acutely painful on pressure, and was again and again located without any hesitation.

Although I could not satisfy myself that I had a fractured rib to deal with, I treated it as such, and, putting the patient to bed, attended to the bronchial condition.

The pain produced by coughing, which at first was very severe, gradually became less, and after a short time was not again spoken of till at the end of sixteen days, when my attention was drawn to a lump on the side. This I found to be in the exact spot where the pain had been complained of. As it appeared to be a mass of callus, I was driven to the conclusion that the rib must have been fractured, and, if, so, then without any known cause, except perhaps sneezing.

Obituary.

PIERRE BUDIN, M.D., PROFESSEUR DE CLINIQUE OBSTÉTRICALE À LA FACULTÉ, MEMBRE DE L'ACADÉMIE DE MÉDECINE, HONORARY PRESIDENT OF THE GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

It is with the deepest regret that we announce the death of Dr. Budin, of Paris, who succumbed to influenza-pneumonia at Marseilles, on 23rd January.

Dr. Budin was born in 1846 at Enencourt-le-Sec. He studied medicine in Paris, and became *interne* in 1871. For his graduation thesis he chose the subject proposed to him by Tarnier, "The Fœtal Head in its Obstetric Aspect." This monograph was published in 1876, and remains a standard work of reference. He became *agregé* in 1880, and was one of the first accoucheurs appointed to the Paris hospitals in 1882.

After the death of Chantreuil, he collaborated with Tarnier in the production of the "Traité de l'Art des Accouchements." The second volume of this work, on the pathology of pregnancy, appeared in 1888, and is perhaps still the best general treatise on the subject. The third volume appeared in 1898, after the death of Tarnier, who had, however, written a considerable part of the work. The fourth volume was published by Budin in 1901, with the collaboration of Drs. Maygrier, Bar, and Bonnaire, who were associated with him till the end in the editorship of *L'Obstétrique*. This

Journal appeared every two months, and was devoted also to the care of infancy and the prevention of infantile mortality—a subject which Dr. Budin had, one might almost say, created.

Readers of these pages are familiar with Budin's great work in founding out-patient dispensaries for the treatment of the infants born in the lying-in wards of which he had charge, first at the Charité, and later at the Maternité, where he succeeded Tarnier, whom he also followed in the Chair of Clinical Obstetrics. The fight against infantile mortality was, indeed, his life's work, and he may be said to have died on the battlefield. He had gone to Marseilles to lecture on the subject, under the auspices of the municipality, when he was struck down, but before his death he had time to discuss with his secretary several details of the campaign. His example has been followed, though we regret to say at a distance and imperfectly, in this country. That his teaching might be made known at first hand, he was elected by the Glasgow Obstetrical Society as its Honorary President, and was invited to deliver an address to the profession, but this was not to be. Dr. Budin died on the very day that the President of the Society was announcing that its Honorary President would address it in the summer.

His treatise on *The Suckling* has recently appeared in English. His work will not die with him, but remains as his best monument—"Posteritati narratus et traditus superstes erit."

CURRENT TOPICS.

GLASGOW'S NEW PRINCIPAL.—Glasgow and the medical profession are to be congratulated on the appointment of Dr. Donald MacAlister to succeed the late Principal Story. The traditional appointment of a divine—a tradition of more than three centuries—has been departed from, and Glasgow has followed the examples of Edinburgh and Dundee in having a member of the medical profession at the head of affairs. It is, however, far from correct to look on Principal MacAlister as a medical man in the ordinary sense of the term. Medicine engages but a part of his energies. In addition to being a

mathematician and a linguist of no mean order, he has an extraordinary knowledge of educational institutions and methods, and his administrative capabilities were recognised when, after serving on various committees, he was elected President of the General Medical Council.

He was senior wrangler and first Smith's prizeman in 1877, and he took his degree of B.Sc.Lond. in the same year. He then became mathematical master at Harrow, and, in 1879, lecturer in Natural Philosophy in St. Bartholomew's Hospital Medical School. Graduating M.A. at Cambridge in 1880, and M.B. in 1881, he became M.D. in 1884. He became F.R.C.P.Lond. in 1886, and was Goulstonian lecturer for 1887, and Croonian lecturer for 1888. He is D.C.L.Durh., and LL.D. of Aberdeen, Montreal, and Toronto. He is also a Fellow of the Royal Geographical Society. He edited Ziegler's *Pathological Anatomy* in 1897, and has made many other contributions to medical literature.

At a time when University reform is in the air, we should feel thankful that the reins have fallen into so strong a hand. Dr. MacAlister has before him a time of stress and arduous work; but we have the fullest confidence that he will gird himself to his task, and we trust that by his ability, his learning, his industry, and his administrative genius he may be enabled to reflect the highest credit on the University of Glasgow.

We understand that, by the desire of the Senate of Cambridge University, Principal MacAlister will continue to represent that University at the General Medical Council.

LECTURESHIP IN APPLIED ANATOMY.—The University Court has just instituted a Lectureship in Applied Anatomy, and has appointed Dr. Robert Kennedy, M.A., D.Sc., to be the lecturer. Dr. Kennedy was at one time George A. Clarke Scholar in the University, and is at present an Assistant Surgeon to the Western Infirmary.

ROYAL INFIRMARY APPOINTMENT.—Miss Agnes Cameron, M.B., Ch.B., has been appointed an Extra Assistant Gynæcologist.

THE DR. JAMES FINLAYSON MEMORIAL.—A largely attended meeting of the medical profession and others interested was held in the Faculty Hall, 242 St. Vincent Street, on 24th January, to consider a proposal to perpetuate the memory of the late

14 beats. By means of tracings of the venous pulse in the internal jugular vein, it was shown that the auricles were beating at a rhythm independent of that of the ventricles. As a rule there were two contractions of the auricle for each ventricular beat. The auricular beat did not occupy any definite relationship to that of the ventricle, as the ventricular contractions came in at varying positions in the tracing. Thus occasionally it coincided with the auricular contraction, while more usually it occurred during the auricular pause. By direct examination of the heart-action by the Roentgen screen this interpretation was confirmed, and the auricles and ventricles could be seen to be beating at independent rates. The patient during his stay in hospital developed on several occasions epileptiform attacks. These attacks were found to be associated with further slowing of the pulse. An intermission of the radial pulse for 12 to 15 seconds did not cause syncope and an epileptiform attack, but longer intervals than this were followed by attacks. The largest intermission noted was 35 seconds. During it the patient was completely unconscious, and went into a condition of muscular rigidity. During one period of five hours, eighty-one of these attacks were counted. During part of this time typical Cheyne-Stokes respiration supervened, but passed off again for several days. The respiratory change came on independently of the intermissions of the pulse, the breathing spell varying from 35 to 65 seconds, while the apnoëic stage was fairly constant at 35 seconds. The pathology of the condition was discussed, and the recent work on the physiology of the auriculo-ventricular connecting fibres of His was briefly summarised.

Dr. Cowan referred to a case where the radial pulse was found to fail before the onset of a fit. In cases going to *post-mortem* examination, no lesions other than that of the heart had been found. He did not know whether the central nervous system was affected in such cases or not.

Dr. Gray said that he had been vainly endeavouring to demonstrate the muscle of His in the human heart. It was certainly absent in the ox and the sheep, and he wished to ask whether the conduction in these animals was myogenic or neurogenic.

Dr. Lindsay Steven said that from a clinical standpoint heart-block was not a good term. He was not convinced that some of the secondary waves in the tracings might not be due to the carotid artery.

Dr. Charteris replied that the lightness of the tracing

excluded the possibility of the secondary waves being due to the pulsations of the carotid artery. He did not consider Dr. Gray's inability to find the muscle of His conclusive evidence of its non-existence.

IV.—SOME OF THE PREVAILING DISEASES IN MOROCCO.

BY ROBERT KERR (RABAT, MOROCCO).

In bringing before you this evening some of the "Prevailing Diseases in Morocco," I desire you to bear in mind her geographical position. From the thirty-sixth parallel north to the twenty-sixth parallel south latitude the prevailing winds in summer are north-westerly, while in winter they are south-westerly. Owing to the mildness of the climate in the north of the empire, diseases vary a good deal compared with those in tropical regions.

The three principal diseases in Morocco are small-pox, syphilis, and malarial fevers. Scabies, the tsetse fly (*Thyhab*), and sleeping sickness are found in the marshes. North of Rabat *Filaria sanguinis hominis* has been found by the late Dr. Grieve and Dr. Dobbart, of Casablanca. Salee is the home of elephantiasis.

The Moslem population suffer, but the Jews don't. Moslems have cesspools in their courts, and drink brackish water from wells contaminated with sewage. The Jews, however, have a good drainage, and water from wells, not from a spring.

While the Jewish population have a greater number of mosquitoes than the Moslems, Morocco city is the home of leprosy. They have the tubercular and anæsthetic forms. They originate in grain districts, where the grain is kept for ten or fifteen years. When they come to the coast the disease is cut short, and has no power to infect others.

There are three ways in which malarial germs may be introduced into the system, and I shall give them in the order of frequency as they have come under my observation.

1. By inhalation.
2. By imbibition.
3. By inoculation.

1. *Inhalation*.—When I went to Rabat I was much perplexed, and could not understand how a large community at the Twerga, in the sultan's palace grounds, should be practically immune, while two small communities, living only half a mile distant, should be continually suffering from malarial

fever, when the conditions of soil, mode of life, and water-supply were the same.

In making observations, I found that those living on the north bank of the river, and in close proximity to the marshes, did not suffer so much from fever as those on the south bank.

I also observed that those who went to the garden parties on the south bank of the river almost invariably came home ill, suffering from chill and bronchial irritation, and that soothing cough mixtures did not give satisfactory results; but I never knew of a garden party coming home ill from the north bank of the river. If the garden parties were caught in a fog, and came home at low water after sunset, they suffered more severely. The natives attributed the cause to Jinoon (evil spirits), who only make their appearance at ebb tide on rivers, and at sunset on land. On another occasion a picnic party spent the afternoon in the garden when it was being ploughed and when there was a heavy fog on the river. On their return the whole party were laid up with remittent fever, and two were confined to bed for five months,

Sirocco winds, which always last for three days at a time, cause very little inconvenience in winter and spring; but in midsummer and the autumn both European and native suffer from fever and bronchial irritation. In winter and spring the marshes are full of water, but in summer and autumn they are dried up.

From observation as to the course of the wind over marshes and rivers, I found that those on the windward side were always free from fever.

One of the most striking and convincing proofs that malarial fever is contracted by inhalation was presented to us when the new aqueduct was constructed in the Loudaia, a few miles from Rabat. No sooner did they begin to dig the soil than the workmen were smitten down by a most virulent form of remittent fever, while the men could only be kept at work by a detachment of soldiers.

In the orange gardens on the bank of the river, as also in the Loudaia, you have always a breeze, and few mosquitoes. In Twerga, abundance of mosquitoes but no fever (only two cases in Twerga in twenty years, contracted outside).

2. *Imbibition.*—In Morocco we have a proverb—

“When the melon fails,
Health prevails.”

Both the water and sweet melon are dangerous, and more

especially if grown on marshy soil. In the morning their large leaves are covered with dew. In a few hours all this moisture is absorbed into the melon.

The Moorish regiment which was sent by the sultan to Dar-al-baida a few years ago, to quell disturbance, was almost annihilated by remittent fever. They retained fairly good health until the melon season, when they died off like flies. I believe there is no more fertile source of income now to the medical practitioner than what comes from the importation of melons, and I believe this also accounts for the great influx of mosquitoes into our island home.

When the water supply is from marshes or from subsoil it is always productive of fever; while milk from cows grazing near a marsh, or drinking stagnant water, is well known to give fever (malarial and enteric). From dispensary records I find that the week following the first crop of melons, 75 per cent of my patients were suffering from malarial fever.

There are many other ways by which one may take fever, such as by eating unwashed grapes, lettuces, &c. (lemons, water and milk), figs, ruptured figs, covered with larvæ.

3. *Inoculation.*—Mosquitoes are a dangerous and troublesome pest. They do considerable harm in proximity to marshes, pools, and sewage drains; but I think there is a greater danger from them than by giving fever—namely, painful and sudden death from mosquito bites after feeding on a dead anthrax animal. There is a fly, smaller than the common house fly, with long proboscis, which is almost as troublesome as the mosquito. I have seen whole families suffering from remittent fever, and on examining the patients found them covered all over with flea bites.

Some years ago at Rabat we had a large number of refugees (the wives and sisters of state prisoners) camped inside the town walls. They lived by prostitution, over a hundred of them suffering from syphilis. There was no accounting for the great outbreak of the disease among young and innocent persons except by inoculation, by mosquitoes, flies, or fleas. The natives said those innocent children contracted the disease by inhalation, and would not on any account go near the huts after the outbreak. The worthy mayor took most effective measures by driving them all out of the city and burning their huts.

I shall now describe the treatment in remittent and intermittent fever. Let me observe that those who have been

ST. ANDREW'S AMBULANCE ASSOCIATION: RESIGNATION OF LORD BREADALBANE.—We observe in the daily press the following letter from the Marquis of Breadalbane to the secretary of the St. Andrew's Ambulance Association, in which his Lordship refers to his resignation of the Presidency of the Association:—

TAYMOUTH CASTLE, ABERFELDY, PERTHSHIRE,
9th February, 1907.

LT.-COL. H. J. BARNES, *Secretary*,
St. Andrew's Ambulance Association,
176 West Regent Street, Glasgow.

DEAR COLONEL BARNES,—I have to thank you for your letter of 8th and extract from minute. May I ask you to be good enough to convey to the Council my sincere thanks for their kind expressions regarding any slight service I may have rendered to the St. Andrew's Ambulance Association in the past, and to assure them that I shall always continue to take an interest in the work of the society. Further, I deeply regret the cause which has necessitated my tendering my resignation as president of the association, and also I look upon the present action of the St. Andrew's Ambulance Association—namely, the lodging of a petition to the Privy Council against the Order of St. John—with the greatest concern, feeling that the course adopted will probably in no way tend to strengthen friendly relations between the Order and St. Andrew's Ambulance Association, and that the result must in the long run be detrimental to ambulance work in Scotland, and probably to the St. Andrew's Ambulance Association itself. Should the petition be successful (a circumstance which, I should say, is most unlikely), it will merely prevent the Order of St. John establishing a Priory, but will not prevent the St. John Ambulance Association from starting as many centres or classes in Scotland as it may think fit.—Yours truly,

(Signed) BREADALBANE.

The Order of St. John of Jerusalem is desirous of obtaining a supplementary Royal Charter to establish Priories in any part of the empire, Scotland, of course, being included. The St. John Ambulance Association, which is the Ambulance Branch of the Order, takes the place in England which the St. Andrew's Association already fills so well in Scotland; and it is thought that, by the establishment in Scotland of a Priory of the Order of St. John, which would undertake ambulance work, the St. Andrew's Association would find its sphere of action encroached upon. This Association has, therefore, petitioned the Privy Council not to grant the

Charter desired by the Order of St. John, so far as Scotland is concerned. In its petition the St. Andrew's Association has offered to act as the ambulance branch of the Order of St. John, provided its independence under its own Royal Charter is not impaired. This offer, however, has not found acceptance with the Order of St. John; but it shows that the St. Andrew's Association is desirous of working harmoniously in the matter of ambulance.

Lord Breadalbane is a member of the Order of St. John, and is chairman of the St. John Ambulance Association; and, owing to the difficulty he now has in acting in a dual capacity, he feels compelled to resign the position of President of the St. Andrew's Association.

The deliberations of the St. Andrew's Council were carried on in private, and his Lordship's letter has therefore come as a surprise to the outside public. Under these circumstances, we regret the publishing of the letter, but we do not share his Lordship's fear that ambulance work in Scotland will suffer from the course adopted by the St. Andrew's Council; nor do we admire the minatory tone of his concluding sentence.

The work done in the past by the St. Andrew's Association is a sufficient guarantee of its usefulness to the public; and we do not fancy that the remarks of the retiring president will have any weight with public opinion in Scotland.

NEW PREPARATIONS, &c.

WE have received the following from Messrs. Burroughs Wellcome & Co., London:—

1. "*Phenofax*," which contains 7 per cent of pure phenol in a bland basis, is an antiseptic healing dressing for wounds, abrasions, burns, and ulcers. It may be applied on lint or may be used as an ointment in parasitic skin disease and irritating eruptions generally. It is suitable for use in the treatment of ulceration of the os or cervix uteri, and for application to affected mucous surfaces as in inflammation of the uterus or vagina. It may also be used for chapped hands.

2. "*Soloid*" *Eosin-Azur*.—Since cultures of the spirochæta *pallida* have not yet been obtained by laboratory methods, its identification has largely rested upon the suitability of the staining reagents employed. Prominence has been given to Giemsa's method,

which has already been recommended for staining malarial blood. The method requires a mixture of aqueous solutions of eosin and pure methylene azur. The necessity of preparing two solutions has been dispensed with by the introduction of the use of "Soloid" eosin-azur for Giemsa staining with one solution. One "Soloid" product is dissolved in 5 c.c. of pure methyl alcohol. A few drops are run on to the film and allowed to remain one or two minutes. Then double the volume of distilled water is dropped on to the film. After another five minutes' staining, the film may be washed in distilled water, dried in air, and mounted in xylol balsam. Nuclear and malarial bodies stain an intense red or violet colour, while the spirochæta pallida stains a paler reddish purple. "Soloid" eosin-azur, 0.015 gm. (gr. 0.231), is issued in tubes of six.

THE following have been received from Messrs. Parke, Davis & Co., London:—

1. *Essencia de Calisaya*.—Each fluid ounce of this preparation represents 24 grains of the best yellow Peruvian bark blended with flavouring agents.

2. *Vest Pocket Inhaler*.—This vulcanite inhaler is a convenient apparatus for the inhalation of volatile medicaments. Inhalers hitherto available have been open to objection on account either of their size or of their liability to breakage. The P., D. & Co. vest pocket inhaler is light, compact, inconspicuous, and practically unbreakable. It ensures an efficient application of this mode of treatment, and provides a portable means whereby inhalation can be practised as frequently as desired in almost any circumstance and without liability of being observed. It requires no skill to charge or keep in order, and is so perfect in construction that when not in use it can be carried in the pocket without danger of leakage. The price is 2s.

MEETINGS OF SOCIETIES.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.

SESSION 1905-1906.

MEETING III.—2ND NOVEMBER, 1906.

The President, DR. JOHN LINDSAY STEVEN, in the Chair.

I.—CASE OF ANKYLOSIS OF THE SPINE.

BY DR. W. K. HUNTER.

Dr. Hunter's paper appears as an original article at p. 185.

Sir Thomas McCall Anderson said that it was rare in rheumatoid arthritis to have a limited ankylosis without any involvement of other joints. Gonorrhœal rheumatism was another possible cause of the condition, and recurring attacks of it might occur without reinfection.

Dr. Gray referred to the occurrence of ankylosis of the bones of the middle ear with no involvement of other joints, and asked if any histological work had been done in a case such as Dr. Hunter had shown.

Dr. Hunter replied that little histological work had been done in such cases, for by the time the case came to *post-mortem* examination the process was generally too far advanced. The theory had been advanced that a blow on the back was the exciting causal condition—the back was kept so rigid owing to the pain that ankylosis was allowed to take place.

II.—CASE OF INFANTILE HEMIPLEGIA WITH ATHETOSIS.

BY DR. W. K. HUNTER.

M. K., æt. 8 years, was admitted to Ward 8 of the Glasgow Royal Infirmary on 6th October, 1906, and the history of the illness, as given by the mother, is as follows:—The child was strong and healthy till 14 months old, when she had a convulsive seizure which lasted for ten minutes, followed, after

an interval of five minutes, by another fit in which he remained for two hours. The description of the seizure is not very clear, but the fit seems to have commenced with a shriek. Then the child became rigid, the eyes were rolled about, and movements were subsequently noted in the face, arm, and leg of the left side. There was no vomiting or shivering that the mother can remember, and she does not think that the child was fevered. Just after the fit it was seen that there was paralysis on the left side of the body. The child was almost $2\frac{1}{2}$ years old before she began to move the left arm and leg again, but soon after this she started to walk, though the left foot was dragged behind the other one. The mother thinks the athetotic movements in the left hand date from soon after the onset of the paralysis.

There was no return of the original infantile convulsions, but a year ago another kind of convulsive seizure made its appearance, and it was on this account that the child was brought to hospital. The mother describes this second type of fit as beginning with a flushing of the face. Then movements appear in the left side of the face, in the left arm, and left leg. The arm comes across the chest, the fingers closing and opening all the while, and the leg is flexed and extended at the knee. These movements last for about ten minutes, gradually getting slower, till they entirely cease. The flush on the face then disappears and is replaced by extreme pallor. There is no complaint of headache or of feeling unduly tired after the fit, for the child is immediately quite lively, as if nothing had happened. On an average there has been about one of these fits per day during the past twelve months; but sometimes there were as many as three in the day, and again occasionally a week would go by without any. When spoken to sharply or beaten she would take a fit.

Family history.—Father and mother are alive and well. A sister, æt. 10 months, died in convulsions; another sister, æt. 5 months, is alive and well.

Present condition.—The child is healthy looking and well nourished. She understands all that is said to her, and, generally, seems of average intelligence. The left side of the face is possibly slightly smaller in size than the right, but otherwise no hemiatrophy is visible. The teeth are good and the hard palate is not unduly arched. Facial paralysis is extremely slight, but it is to be noted that when the child laughs the movements at the left angle of the mouth are not so active as those on the right. The movements of the tongue are normal and the articulation is unaffected.

There is little loss of power in the muscles of the left arm, and this limb can be moved about in much the same way as the other arm. Any difference in the two seems to be due to the athetosis movements interfering with co-ordination rather than to paralysis of muscles. The grip of the left hand is almost as good as that of the right. The circumference of the left arm measures a quarter of an inch less than the right, but atrophy is only apparent in the supinator longus, and this is but slight. A certain amount of rigidity is noticeable in extending passively the wrist and fingers, and in straightening the arm at the elbow. The tendon reflexes in the left arm are equal with those in the right, and they cannot be said to be exaggerated. There is no apparent atrophy of the muscles of the leg, and no lack of muscle tone—indeed, the muscles on the left calf seem firmer to the touch than those of the right. While lying in bed the one movement which is defective is flexion of the foot at the ankle-joint, for while the right foot can be flexed to less than a right angle the left cannot be flexed to an angle smaller than 65° . This is a trouble in walking, causing the child to lift the left foot higher than the right so as to clear the extended foot off the ground. Except for this movement, which gives a somewhat halting gait, the child walks with little difficulty. The only rigidity in the leg is in the muscles of the calf, causing this difficulty in flexing the foot just referred to, and giving the foot the position of a slight talipes equinus. Both knee-jerks and tendo Achillis-jerks are present, and equal on either side. Ankle-clonus is obtained with difficulty in the left. Babinski's sign is present on the left, but on the right the movement of the great toe is definitely one of flexion.

The athetotic movements are limited to the left arm, producing slow movements of flexion and extension of the fingers at the metacarpo-phalangeal joints, of flexion, extension, pronation, and supination at the wrist, and of flexion and extension at the elbow. There are no trophic disturbances on the left side, and sensation is unimpaired. The temperature of the affected limbs seems the same as those on the sound side.

There is no enlargement of the heart, and the sounds are normal. Examination of the other organs is negative. The urine contains neither albumen, sugar, nor bile.

Since admission—a period of three weeks—the child has had a number of the slight fits described by her mother. On an average there are from two to three in twenty-four hours. Each lasts but a few seconds—sometimes five seconds,

sometimes twenty to thirty seconds. She may be lying in bed, sitting by the fire, or walking about when the seizure comes on. The first thing noted is a flushing of the face, then the mouth is drawn slightly to the left, and sometimes there are slight twitchings of the left side of the face. The hands are firmly clasped, and sometimes are moved upwards over the chest. The left leg, too, may move, being drawn up several times in succession. There are usually some slight, quick, inspiratory or gurgling sounds, and then the fit ends, with the flush going and the face becoming very pale. Loss of consciousness cannot be determined, and if there is any it must be momentary, for the child sometimes has the seizure when walking and yet she does not fall down; also, she can describe immediately after what movements she made during the fit.

Since admission to hospital, the athetotic movements are less pronounced, and the patient seems to have more control over the movements of her arm.

Remarks.—This seems a fairly typical case of infantile hemiplegia, and as such it differs considerably from the hemiplegia of the adult, not only as regards its etiology, but also in the grouping of its symptoms. Most (90 per cent) of these infantile hemiplegias occur before the sixth year, and over 50 per cent within the first two years of life. Probably not a fifth of all the cases are due to lesions similar to those met with in the hemiplegia of the adult, *i.e.*, hæmorrhage, embolism, or thrombosis, and of this fifth the most occur in children older than 6 years. Most of the infantile hemiplegias seem to be due to an encephalitis, a condition similar to the anterior poliomyelitis met with in children of a similar age, but involving the motor cells of the cerebral cortex instead of those of the anterior horn of the cord. The mode of onset in the two conditions is much the same, for in both we most often have sickness, vomiting, fever, convulsions, and frequently coma. These symptoms are followed, after an interval of about from one to seven days, by paralysis, the character of the paralysis varying with the seat of the inflammatory process. If it is the anterior horns of the cord that are involved we have an infantile palsy; if it is the motor area of the cerebral cortex the result is an infantile hemiplegia. In both cases the condition is doubtless an infective one, but what the virus is, or if it is the same organism in the two types of palsy, has not yet been determined. Just as in infantile palsy the recovery of the affected muscles may be complete or incomplete, so in infantile hemiplegia we may have all degrees of paralysis

persisting. The face and trunk rarely show much loss of voluntary movement, and there is often more paralysis of the emotional movements of the face than of the voluntary movements. The arm most often is more affected than the leg, and the peripheral segments of these limbs more than the proximal ones. There is always some rigidity of the affected muscles, and this interferes to some extent with the accuracy of voluntary movement.

Post-hemiplegic involuntary movements are common in infantile hemiplegia. They usually appear a long time after the onset of the paralysis, and their onset may be taken as an indication that there will be no further recovery of voluntary movement. Athetosis is the most frequent of these involuntary movements, and it more often affects the arm than the face or leg. There may, however, also be involuntary tremors, or chorea-like movements, either along with or apart from the athetosis.

Frequently there is some arrest of development of the tissues of the paralysed side, and so we may have all degrees of hemiatrophy of bones, muscles, or subcutaneous tissues. There is often, too, some vasomotor paralysis on the affected side.

In 50 per cent of the cases epileptic fits make their appearance at a period varying from one to ten years after the onset of the hemiplegia. These are always unilateral and usually not so severe as the average fit of *grand mal*. Sometimes the seizure, as in this case before us, is similar to that of *petit mal*.

The treatment of such cases is too often neglected, and most excellent results have been obtained by careful education of the affected muscles. This is a matter of some difficulty, for the child tends to make use of the sound muscles and to neglect the affected ones. But by massage and passive movements much can be done to improve the nutrition and lessen the rigidity of the muscles, and with gymnastic and other exercises a great improvement can be brought about in the movements of the paralysed limbs.

III.—CASE OF SUPPURATING PERIODONTAL CYST.

By. DR. W. W. CHRISTIE.

J. B., aged 39 years, coalminer, came to the Western Infirmary Dispensary on 7th August, 1906, when I was acting for Dr. Walker Downie. He stated that a discharge

had been escaping into his mouth for the past six years, and that owing to general weakness he had been obliged to stop work about four months ago.

Patient stated that about six years ago he had what he described as "a chronic gumboil," and that this was then opened by his doctor on two occasions, with an interval of two or three weeks. The left upper lateral incisor was next removed, and a fortnight later discharge "burst through" the socket. From that time onwards he has always been able to cause pus to flow from this socket by pressing on the left cheek about the level of, and about half an inch to the outer side of the ala nasi. The only occasion on which the discharge ceased during these six years was for a few weeks in the spring of the present year. There has never been any nasal discharge.

Examination.—There is no swelling of the face externally, no bulging in the canine fossa, no bulging of the outer wall of the left nostril, no pus in the nasal fossæ, and no nasal obstruction. Nothing calling for special mention about fauces, pharynx, or naso-pharynx. On pressing the cheek at the point mentioned above, about half a drachm of pus escaped from an opening occupying the site of the upper left lateral incisor. The upper left central incisor was carious, but the canine of that side was apparently sound.

On 15th August the antrum was punctured through inferior meatus with a Lichtwitz's trocar. On irrigation no fluid returned through the nose, but a quantity of pus was washed out through the opening in the alveolar margin. After this irrigation the discharge of pus ceased, and none could be pressed out as formerly. A number of stumps, the left upper central incisor, and left upper canine were extracted, but nothing abnormal was found on any of the roots.

On 20th August the antrum was again punctured and irrigated through the inferior meatus. The solution returned through the nostril entirely, none escaping into the mouth. It returned perfectly clear and free from pus. The cannula was withdrawn, and a fresh puncture made lower and in a more outward direction. The fluid then returned through the sockets of the central incisor and the canine which had been removed, but none came through the original sinus in the alveolar margin nor through the nostril. The returning fluid contained no pus, only a few flakes of granular *débris* such as would be lying in the sockets.

On 23rd August Lichtwitz's trocar, introduced through the sockets of the left upper canine and central incisor, enters a

large cavity, giving the impression of extending to near the summit of the antrum. Fluid injected passes out at one or other of the tooth sockets, but none comes from the nostril. A few flakes, apparently altered food, washed out, but no pus.

On 7th September pus began to escape into mouth again as formerly, and could be caused to flow by pressure on the cheek.

On 26th September, the patient being anæsthetised, Dr. Walker Downie made an incision through the labio-alveolar fold in the canine fossa, and opened into an abscess cavity through a very thin bony wall. The cavity extended antero-posteriorly from over the incisors to over the molars, and occupied apparently more than half of the whole antral cavity. It contained very foetid pus. The interior, while somewhat uneven above, had no trabeculæ like an antrum. The whole lining membrane was thick and had an œdematous appearance. Its surface was smooth and there was an entire absence of anything resembling a polypoid condition. During the operation neither blood nor pus appeared in the nose, indicating that there was no communication between this cavity and the nasal cavity. The whole lining membrane was scraped away and the cavity packed with double cyanide gauze.

From these examinations it was clear that we had to deal with an encysted suppurative condition within the maxillary antrum. The results of washing through the inferior meatus and through the openings in the alveolar margin excluded both empyema of the antrum and maxillary sinusitis.

The cysts met with in the maxillary antrum are mainly of two kinds¹:—

1. Cysts due to alterations in the glands of the lining membrane of the antrum or of their ducts.
2. Cysts arising in connection with diseased teeth, or tooth follicles.

Other forms of cysts which may be met with, such as hydatid cysts, are of rare occurrence.

Both of these varieties of cysts may become infected and suppurate.²

The cysts arising in connection with glands are, of course, wholly within the antrum, unless they attain a large size. If the antrum is not large enough to accommodate them, its

¹ Moure, *Manuel des Maladies des Fosses Nasales*.

² Dunochowski, quoted by Brown Kelly in *Glasgow Medical Journal*, October-November, 1904.

walls then become eroded or distended¹ in the directions in which they are thinnest, that is, towards the canine fossa, the orbit, the cheek, and the outer wall of the nostril. In short, the pressure is from within the antrum outwards in the directions of least resistance.

Dental cysts of the upper jaw, on the other hand, begin outside the antrum, and as they grow they very often form a cavity for themselves in the thick bone,² and as the cyst enlarges it may, and indeed very often does, bulge into the antrum.

It is the roots of the second bicuspid and first and second molars which usually are in closest relation to the antrum, but in this case the sockets of the two left upper incisors and the canine gave exit to fluid injected into the cyst, thus showing their connection with it.

Tillman³ distinguishes two varieties of periodontal cysts—(a) dentigerous and (b) periosteal cysts. The former arise from the degeneration of a normal or superfluous tooth germ. They are said to be rare and to develop chiefly during dentition. The latter develop most commonly, according to Partsch, in the periosteum in the region of the tooth roots. The inner wall of such cysts has an epithelial lining which, Brunn states, comes from the epithelium of the enamel.

The present case most probably belongs to this latter class.

IV.—SOME CURIOUS BODIES FOUND IN THE FEMALE BLADDER.

BY DR. A. GALBRAITH FAULDS.

Dr. Faulds' paper will be found as an original article in our issue for January, 1907, at p. 27.

Dr. Oswald said that in asylum work foreign bodies were frequently found in the bladder, and he had quite a collection. In one case a gold chain of seven links, with 1½ oz. of salts deposited on it, was found in a woman's bladder. Hairpins, crochet needles, &c., were frequently found. As a rule, he did not think they were inserted by nymphomaniacs. It was more often women at the climacteric rather than nymphomaniacs who did this sort of thing.

Dr. Lindsay Steven had once found a bristle in the pelvis of the kidney, where it had formed the nucleus of a calculus 3 inches long.

¹ Tillman's *Surgery*, translation, Appleton & Co., 1903, vol ii, p. 334.

² *Revue Hebdomadaire de Laryngologie, d'Otologie, et de Rhinologie*, 1906, vol. i, p. 527.

³ *Loc. cit.*, p. 341.

V.—RINGWORM AND ITS PRESENT TREATMENT.

BY DR. J. GOODWIN TOMKINSON.

Exhaustively to treat of ringworm and its present therapeutics in the short time at my disposal would be to attempt the impossible, hence the superficial and cursory character of the generalisations with which I will endeavour to engage your attention.

The clinical manifestations consequent upon the growth of the different varieties of those lowly vegetable organisms, the *microsporon audouini* and *trichophyton megalosporon*, are many and varied. Those, however, appearing on the scalp—in the overwhelming majority of cases that of the child—have been lately particularly engaging the attention of dermatologists in this country, and, perhaps, more so that of dermatologists abroad.

We are all of us more or less familiar with that typical form of ringworm of the scalp, seen so frequently in children, where one or more approximately round, slightly elevated, greyish or scarcely perceptibly erythematous, furfuraceous patches, exhibiting variously contorted stumps of broken hairs, exist. Such a clinical picture presents no great diagnostic difficulties. The patch formation may be, however, very much less evident than just described, and it is well also to bear in mind those rarer forms of *trichophytosis* which are from time to time encountered, where microscopical investigation may be essential to satisfactory diagnosis. Such rarer forms as the black dot ringworm, where the hairs are broken off immediately at the follicular orifice, and the deciduous variety denominated bald ringworm, where there is not even the commemorative of follicular stumps, but a complete and absolute emptying of the follicle, may be mentioned. Again, the secondary modification consequent upon scratching—in those cases where the subjective phenomenon of itching exists—and the effects of previous treatment, may render necessary a careful enquiry into the condition, which would have been in the uncomplicated lesion altogether needless.

Tinea tonsurans may be described as a disease characteristically affecting the juvenile scalp, and usually disappearing, even if left untreated, at puberty. Isolated cases, however, occur in adult life.

While the adult scalp may be regarded as practically immune to the attacks of the causative fungi, no such marked power of resistance exists in the bearded region, for

it is in that location that some of the most disfiguring lesions occur. The affection, however, in this region may exhibit a relatively benign character of a superficial type, with no profound follicular involvement, and readily amenable to therapeutic measures. On the other hand, it may be of a deep-seated character, causing considerable temporary local disfigurement, and not a little mental distress from æsthetic considerations. In the latter variety nodulations and a more or less purulent discharge, or even abscess formation, occur.

With the exception of *tinea marginata*, or, as formerly described, *eczema marginatum*, most forms of ringworm of the glabrous skin are eminently responsive to local treatment. Here the physiognomy, from which the name is derived, is seen. Originating as a slightly raised, reddish spot, usually with clearly defined border, and exhibiting more or less furfuraceous scalliness, it spreads peripherally, with a tendency, not always evident however, to central clearing. Finally a somewhat raised, scaly, erythematous ring develops, which may or may not show papular, vesicular, or pustular lesions. Occasionally a concentric ring formation results, and in those cases where no central subsidence occurs, a more or less elevated patch persists. One to many lesions may exist, and in some instances, by fusion of contiguous areas of disease, a figured festooned disposition ensues. When occurring in the genito-crural region, favoured by the warmth and moisture of the situation, a more or less eczematous condition results, characterised, however, by a clearly-defined elevated border, which may almost be regarded as pathognomonic of the affection. Its analogue occurs in the axillary region. A form affecting the palm of the hand may somewhat simulate a scaly syphilide of that region. Baretta has an excellent model of this condition in the museum attached to the St. Louis Hospital, Paris, and also of trichophytic lesions of the plantar region of the foot. Lesions of the epidermis contiguous to the mucous membranes may lead to the involvement of the latter. The nails, when attacked, exhibit a most intractable form of the malady, a fact which should be borne in mind by those concerned in the treatment or examination of ringworm patients. I have a friend, a French dermatologist, an enthusiastic laboratory worker, who twelve months ago was suffering from nail ringworm (onychomycosis), contracted, no doubt, in the prosecution of his profession. Nail affections are notoriously difficult to diagnose—obviously microscopic examination is here indicated.

A form of trichophytosis meriting special reference is that

known as kerion—the kerion of Celsus. It is a lesion of a markedly inflammatory type, unconfined to any particular region, though perhaps most frequently described as affecting the scalp. Approximately round in shape, it presents an angry looking appearance, showing numerous dilated follicles, with more or less purulent contents, readily expressed by digital manipulation, and it is not infrequently covered with crusts. It is really a pustular folliculitis of the scalp, of trichophytic origin. Some have described it as nature's attempt at cure; certain it is that it has a marked depilatory effect, the hairs in the main being discharged from the affected follicles, but peripherally there may still remain affected hairs.

The etiological factor in all these forms of ringworm is a vegetable fungus of which there are two main groups—a small-spored one, the *microsporon audouini*, of which there are several varieties (four), and a larger spored one, the *trichophyton megalosporon*, of which (according to Sabouraud's exhaustive researches) there are many varieties distinguishable by cultures, &c. The small-spored variety has a marked predilection for the scalp, and, save in rare instances, exclusively the juvenile one. In affected hairs the spores are found external to the hair and irregularly arranged; the mycelium, however, attacks the hair itself. In the larger spored group, the *trichophyton megalosporon*, the spores are arranged in a chain-like manner. There are two main varieties—one in which the fungus is contained within the hair, and another in which there is also an external distribution which has led to the description of an *endothrix* and *ectothrix*, or rather *endo-ectothrix*, variety. Mr. Malcolm Morris attaches little importance to this distribution, alleging that it is based on a mere accident of position. It may be said, however, that the *ectothrix* variety is usually associated with the more pronouncedly suppurative lesions, and both Sabouraud, in France, and Gilchrist, in the United States, have proved experimentally that the *ectothrix* is in itself, without any superadded microbic infection, of pyogenic nature.

While working with Sabouraud I made some cultures of ringworm fungi (obviously French species), and have brought a selection with me to-night, but am afraid they have suffered considerably from the variations of temperature, &c., which they have sustained since they were made. The first ten are of different varieties of the *trichophyton*, and it will be seen that they show either a crateriform or an approximately acuminate growth, in the latter case, in some instances, quite

marked, especially in the specimen of *trichophyton violaceum*. Next this variety is a tube showing a culture possessing a very pretty rosy or pinkish tint. The two specimens numbered 11 and 12 show the white, downy, radiating type of the *microsporon audouini*. Not a few ringworm fungi are of animal origin, and often produce markedly suppurative lesions. Some varieties, however, have, as yet, only been found parasitic in man.

The ordinary form of ringworm of the body, *tinea circinata*, is very amenable to treatment, yielding quickly to any antiparasitic application of sufficient strength. *Tinea marginata*, or, as formerly described, *eczema marginatum*, responds to antiparasitic treatment, but in cases of markedly eczematous appearance a preliminary soothing application is obviously indicated. Ringworm of the nails is an exceedingly intractable malady, so much so that Fournier recommended, in particularly inveterate cases, evulsion of the nail. Sabouraud advises the application of a preparation containing iodine dissolved in an aqueous solution of iodide of potassium.

Iod. métallique,	.	.	.	.	.	5 c.g.
Iod. de potasse,	.	.	.	.	.	1 gramme.
Eau distillée,	.	.	.	.	.	100 grammes.

Should this fail, the evulsion of the nail, followed by tincture of iodine, weakened ten times its volume by 60 per cent alcohol. Not a few commend Harrison's method, where two solutions are employed—No. 1, applied for fifteen minutes, containing 1 drachm of potassium iodide in an ounce of half strength liquor potassæ, followed by a twenty-four hours' application of No. 2 solution, containing 4 grs. of HgCl_2 in half strength spirits of wine, distilled water in both solutions being the diluent.

Kerion is largely self-curative, and most are agreed that a mildly soothing treatment—such as an aqueous solution of boric acid followed by a mild ointment, or the application of starch poultices—is the one indicated, supplemented, of course, by attempts at epilation. Sabouraud recommends, in addition, the use of an attenuated tincture of iodine, made by diluting it in ten or fifteen times its volume of weak alcohol.

The motive, however, which, in the main, has prompted me in submitting this particular subject for your consideration, is to draw attention to that new method of treatment of scalp ringworm which has latterly been exciting considerable interest in the dermatological world.

The rebelliousness to treatment of ringworm of the scalp is

notorious, especially that due to the small-spored variety of fungus, and in this country not less than 80 to 90 per cent of scalp ringworm is due to that variety. Even when under the care of those who claim special knowledge of the disease, a protracted treatment is often necessary, disappointing alike to parents and physician. Many who have been connected professionally with institutions for the accommodation of juveniles will have had demonstration of the highly contagious character, and rapidity of spread, of ringworm in children, and its inveteracy when attacking the scalp. This rebelliousness to treatment is due to the invasion by the fungi of the hair follicles and their contents, and to the inaccessibility of the roots of the hair to antiseptic medication. The method of epilation by forceps doubtless would be invariably successful (at least in older children), coupled with thorough antiparasitic treatment, were it not for the fragility of the affected hairs, many of which break off under traction, leaving their follicular portion still implanted in the skin. Sabouraud and Noiré remark in their article, "*Traitement des Teignes Tondantes*," "All antiseptics kill the cryptogamic hair parasites, but no antiseptic penetrates into the hair follicle more than 1 millimetre deep. Now, a child's hair is implanted 4 millimetres deep in the skin, and the parasites occupy its root as far as the terminal swelling."

In 1896, a year after Roentgen's discovery, Freund attempted the treatment of ringworm by the *x*-rays, and since then, in both hemispheres, radiotherapy has been experimentally employed with, however, from time to time, the unpleasant results of irremediable permanent alopecia, consequent upon radiodermatitis. Of the depilatory action of *x*-rays there was no doubt, when pushed far enough, but the line of demarcation between an exposure which would allow of a subsequent regrowth, and one followed by permanent baldness of the exposed area, was undefined. This necessitated great care and multiple exposures. Regulation by the length of time of exposure is faulty, for, as Sabouraud indicates, many things may cause a variation in the rays—the hygrometric state of the air, the thickness of the glass of the tube, &c. The all-important fact is, not the time of exposure, but the quantity of rays therapeutically employed.

Two colour tests have been evolved for the measurement of a safe quantity of *x*-rays in the treatment of ringworm. One by Holzknrecht—a speciality—which is now no longer procurable, and which possessed more than one disadvantage. About two years ago Sabouraud and his assistant, Noiré,

produced a pastille composed of paper coated with an emulsion of platino-cyanide of barium in acetate of starch collodion, which had the property of changing colour under x -ray influence, and, further, they discovered a standard tint B which indicated a sufficient and safe quantity of x -rays to produce total depilation of an exposed area, without the risk of dermatitis and consequent permanent partial or complete alopecia.

Briefly described, the treatment is as follows:—The area to be treated is marked by the physician; thereafter a specially trained nurse takes the patient in hand. The affected area is placed (by leaning the head against a mechanical device) at a definite distance from the anticathode, viz., 15 centimetres. At a distance halfway between the area treated and the anticathode is placed Sabouraud's pastille, supported on a metallic surface impermeable to the x -rays, and in semi-obscurity. When the tint of the pastille becomes the same as the standard tint B the *séance* terminates. The comparison is made in broad daylight, and at once, for the pastille gradually recovers its original colour when removed from the influence of the x -rays. After the exposure the scalp is dressed daily with tincture of iodine, diluted nine times with 80 per cent alcohol. Not until a fortnight after the exposure do the hairs begin to fall out. On the eighteenth day, daily soap washings are instituted, the scalp rubbed, and the depilatory process assisted by the nurse's fingers. In about a month's time, or a little more, all the hairs have disappeared, and the spot remains absolutely bald for about two months; in two more, or thereabouts, the regrowth should be complete. Sabouraud employs this treatment also in tinea barbae, but in a modified manner. In this situation the hairs are not so fragile, and forceps epilation, coupled with energetic antiparasitic treatment, is in the end curative.

In Paris many cases of scalp ringworm in children are treated in l'École Lailler, which is part and parcel of the St. Louis Hospital. The institution of the treatment just described has so modified results there that it has saved l'Assistance Publique 1,500,000 francs already. In time Sabouraud states that he hopes to remove from Paris even the memory of the ringworm epidemics it has known. The results, perfect in every way, are dependent, however, upon strict conformity to the rules for its application laid down by the inventor of the method, or, in his own words, "*C'est vraiment parfait quand on l'applique parfaitement.*"

It would appear that the disease, in that it interferes not a

little with education, should be dealt with by our municipalities by placing its treatment within the sphere of public health authorities who have now such a powerful therapeutic agent within their reach. This would be in harmony with the suggestion made some time ago by Mr. Malcolm Morris that special schools should be established in our more densely populated areas, where treatment and teaching could be carried out at one and the same time. With a view to prophylaxis, he also suggested the compulsory sterilisation of barbers' instruments before approaching an individual's hair or beard. To this I would add the upholstering of our railway carriages and public conveyances with such material as would allow of their thorough and frequent antiseptic cleansing. Many other preventive measures might be suggested, but one of the most powerful prophylactic agents would be the general observance of stricter rules of personal ablution. George Augustus Sala said that a man could not be called a cleanly individual who only once in seven days took a bath. Doubtless he was right, but I am inclined to think that if every man, woman, and child in these islands could only be prevailed upon to take a thorough bath even once a week there would be not only a marked diminution in the disease under consideration, but in many others, of far graver prognosis, that afflict humanity.

By such and kindred hygienic measures, suggested by the medical profession and fostered by the State, we can alone hope to realise that ideally healthy body upon which the evolution of the highest social life largely, if not entirely, depends.

Sir Thomas McCall Anderson was inclined to regard the various organisms described as simply variations of the two types, the endo- and the ectothrix. Variations in soil, origin, &c., cause some deviation from the original type.

Dr. Lindsay Steven, judging from his experience of ringworm in the Sick Children's Hospital, did not think that, in Glasgow at anyrate, the disease was sufficiently common to justify any action on the part of the municipal authorities.

Dr. Tomkinson replied that, though different soils might cause variations in the organisms, investigation showed that there were more than two varieties of organisms causing ringworm. Ringworm seriously interfered with a child's education, and with a small expenditure much could be done for these cases.

OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

SESSION 1905-1906.

MEETING IV (*continued*).—24TH JANUARY, 1906.*The President, DR. J. K. KELLY, in the Chair.*

III.—NOTES OF FOUR CASES OF OBSTRUCTED LABOUR: TWO FROM CANCER OF THE CERVIX, ONE FROM HYPERTROPHY AND PROLAPSE OF THE CERVIX, AND ONE FROM COMPLETE OCCLUSION OF THE OS UTERI.

BY DR. ROBERT JARDINE.

Cancer of the cervix.

CASE I.—Mrs. C., xi-para, æt. 36, seven months pregnant, was admitted to the Glasgow Maternity Hospital on 11th May, 1905, suffering from severe hæmorrhage. Six weeks earlier she had been seen by Dr. Banks, one of the out-door house surgeons, for bleeding from a cancerous cervix, which he had considered too far advanced for operation.

The patient stated that the bleeding had commenced when she was three months pregnant, and had recurred frequently since then. Prior to this pregnancy her menstruation had been normal, the periods lasting for three days, but during the last few years she had suffered from much more pain than in her younger days. She had never had any foul discharge, and there had not been any clots passed until a day or two before admission. She had lost a good deal of flesh. Since the bleeding had commenced she had suffered from intermittent pain in the left groin and down the left thigh. There had been no trouble with the bowels or bladder. Her last delivery had been ten months ago.

Her family history was good. Her mother, aged 79, was still alive, and her father had died at the age of 88.

On examination the patient was found to be in labour. She stated that the waters had come away twenty-four hours previously and that there had been a great deal of bleeding during the few hours prior to admission. The child lay transversely with its head in the left flank. The os was partly dilated, and easily admitted two fingers. The bleeding had ceased. The anterior lip of the cervix was one hard mass

of cancer, which extended close up behind the symphysis pubis, but did not seem to be attached to the bone. The posterior part of the cervix was quite soft and dilatable. On the left side of the vagina there was a projection outwards of the cancer. By passing the finger up the cervical canal the cancer could be felt extending beyond the internal os into the lower uterine segment.

It was quite evident we had to deal with an inoperable case. As the membranes had been ruptured for twenty-four hours, and the child lay transversely, I determined to dilate and deliver at once by version, before impaction had occurred. The posterior portion of the cervix yielded easily, and version was quickly accomplished. The child was asphyxiated, but came round. It was kept in the incubator, but only lived three days. It became very jaundiced before it died.

After delivery there was very little bleeding, but to prevent any further loss from oozing I plugged the uterus and vagina firmly with iodoform gauze.

I removed a portion of the mass, and the diagnosis was confirmed microscopically.

The plugging was removed twenty-four hours after delivery. The patient made a good recovery, but she complained of severe pain down the back of the left thigh. The sciatic nerve was being pressed upon.

I did not see the patient after she was discharged, but I heard she had been at the Royal Infirmary Dispensary, and also in the Cancer Hospital for a time. I last heard of her in November, when she was being attended from the medical mission.

CASE II.—Mrs. M'A., vi-para, æt. 34, full time, was admitted to the hospital on 3rd December, 1905, in labour. The patient stated that her previous labours had been normal. During the present pregnancy she had suffered from slight bleedings at the times which corresponded with her menstrual periods.

The resident found the os was about the size of a shilling, and the head was presenting. He noticed that the posterior lip of the cervix was harder and more irregular than usual, but did not at first recognise the condition. I saw the patient about ten hours after admission. The labour had progressed very slowly.

I found the os was partly dilated, but the posterior lip of the cervix was infiltrated with cancer. The lip was separated into two layers by a sulcus nearly an inch in depth. The anterior layer was very much harder than the posterior, and

difference in character between the several portions of the exposed mucous membrane may have depended on the two-fold origin of the bladder—from the primitive gut and from the stalk of the allantois. Each ureter opened on the bladder surface at a point 4 centimetres externally to the urachal opening and 2 centimetres from the lateral margin of the mucous membrane, the orifice being nearly on a level with the corresponding half of the penis.

The genital organs.—Near the right kidney, external to it and slightly below it, there was a double elevation of the peritoneum. This on section proved to be testicle and epididymis. (Section shown.) The vas deferens from the latter opened into the right ureter about the middle of its length, or, to put the facts in the order of development, the vas deferens (Wolffian duct) ran directly into the bladder, while the ureter came off as a branch from its inner side, as in the embryo about the end of the first month, in which, however, the ureter is still to the outer side of the duct. (Several sections of the junction shown.) The left testicle remained undiscovered after a long search, until a small body found behind the peritoneum in the lumbar region, and pushed aside as merely a lymphatic gland, was submitted to microscopic examination, when it proved to be testicle and epididymis. The vas deferens could not be traced; but a careful inspection of the ureter failed to reveal any junction of the duct with it, such as was quite plain on the opposite side.

Bulging out between the everted bladder and the halves of the split scrotum, there was a globular prominence (Fig. II, 4), with two small sausage-like appendages (Fig. II, 5, 6). This globular swelling, with its appendages, could be replaced in the pelvis during life and after death. In this position it formed a cavity 2 centimetres in depth, into the lower part of which the rectum opened (Fig. I, *U.G.S.*). The cavity was evidently the urino-genital sinus and ectodermic cloaca, and the appendages, which were tubular in structure and approximately 2 centimetres in length, were the lower ends and only remaining portions of the Müllerian ducts. The ducts hung down into the cavity of the replaced sinus because they had prolapsed through their orifices. This was beyond doubt. In one the prolapse was complete; in the other it was incomplete, the free extremity being within the lumen of the attached portion. (Section shown.) From one side of each of the prolapsed ducts there ran out a fold of peritoneum, the homologue of the broad ligament. Viewed from inside the

abdomen, this fold, twisted into a cord, was seen to dip into the inside—originally the outside—of the Müllerian duct, and in the transverse sections was quite conspicuous. The tissues were not in good condition for accurate cytological observation, but the mucous membrane lining the ducts showed quite plainly short tubular glands lined with columnar epithelium. The walls of the sinus itself showed longitudinally and circularly disposed muscle fibres, and the tubular glands in the mucous membrane could be traced from the orifices of the ducts to about the middle of the depth of the cavity of the sinus. In this foetus, then, there was a largely-developed, bicornuate uterus masculinus.

On the inner side of each thigh there was a cutaneous fold, half of the divided scrotum (Fig. II, 9, 10), and each bore an appendage (Fig. II, 7, 8), half of the split penis, into which could be traced the fibres of one of the ischio-cavernosi muscles.

The right knee presented. There being a club-foot on this limb, the other limb being dwarfed and widely separated from its fellow, and there being a ventral hernia and malformation of the urino-genital organs, the diagnosis of the position was unusually difficult, but the delivery was easy enough. The malformations found in the infant *post-mortem* were—split pelvis, ventral hernia, extroversion of the bladder, split penis and scrotum (the testicles being within the abdomen), persistent cloaca with largely developed Müllerian ducts (cornua uteri masculini), absence of the greater part of the colon, and sacral meningocele. The dwarfed limb was devoid of muscles and nerves, there being only fat between the bones and skin.

Dr. MacLennan asked if there were any tendons on the toes.

Dr. Lindsay replied that there were not.

(The report of this Meeting will be continued in our next issue.)

GLASGOW SOUTHERN MEDICAL SOCIETY.

THE Society met on 9th May, the President, Dr. T. K. Monro, in the chair. The evening was devoted to a discussion on the "Treatment of Acute Rheumatism," which was introduced by Professor Stockman.

Dr. Stockman remarked that within recent years acute rheumatism had been classified as an acute infective disease, and had been removed from the class of constitutional diseases. A diplococcus had even been found, which was stated by several observers to be specific in acute rheumatism, but this view had not been generally accepted. He detailed some experiments he had made to find such an organism during life, but these had always failed, and some held the view that the diplococcus referred to was obtained only after death, and was a variety of streptococcus. According to one modern view, acute rheumatism was a form of pyæmia. The symptomatology of the disease was reviewed, and the general similarity of the symptoms of this disease to those of other infective diseases was insisted upon. The fact that it was a self-limiting disease was stated; but the duration varied greatly in different cases. The history of the various methods of treatment which had been adopted was briefly sketched, and it was shown how such methods had been influenced from time to time by the current theories on its pathology. Dr. Stockman then gave at greater length the history of the accidental discovery of artificial salicylic acid in 1875. His belief was that it acted either by destroying a specific microbe or by neutralising its toxins. Its action was rapid, and this might be explained on the theory that it was excreted directly into the affected joints and soon became of sufficient strength to control the poison locally; while in the muscular and aponeurotic lesions its action was not so satisfactory, probably because it could not reach the toxic agent there in sufficient quantity. The influence of dose on its action was discussed, and it was emphasised that the dose must be adequate. Numerous charts showing how the temperature and pain were controlled by the drug were handed round. The importance of early treatment was strongly put; it was necessary to get at the infective agent before it had become widely disseminated in the body. All substitutes for salicylic acid depended for their action on the salicylic acid produced from them in the body, and then circulating in the blood. It was noted that a

variable quantity of salicylic acid was converted in the body into salicyluric acid, and this was inert in acute rheumatism; the quantity so converted varied from a half to two-thirds of the ingested salicylic acid. Methyl salicylate was of use when applied locally or when given by the mouth in doses of 10 to 15 minims. In some cases where salicylates could not be used owing to idiosyncrasy, benzoic acid or sodium benzoate could be given in very much larger doses than the salicylates and did good—its toxicity seemed to be practically *nil*. In conclusion, Dr. Stockman expressed the hope that in the near future an even more potent specific than salicylic acid would be discovered; one that would not only control the fever and pains, but also prevent the various complications of acute rheumatism.

A discussion followed in which Drs. J. Stewart, A. Miller, C. E. Robertson, James Hamilton, J. Hogg M'Donald, David Couper, Reg. Dunlop, Yuill Anderson, R. Wardrop Forrest, and T. K. Monro joined, and various interesting points were raised, notably one by Dr. M'Donald, viz., that possibly if a compound were invented to neutralise the toxins of acute rheumatism, one might be found to neutralise the toxins of many infective agents—for if most bacteria were susceptible to antiseptics, then their toxins might be neutralised by a common antitoxin. Some doubts were thrown on the theory that acute rheumatism was due to a bacterium, and also on the view that salicylates were specific in their action in this disease.

Dr. Stockman replied to the various questions, and at the conclusion of his remarks was heartily applauded.

REVIEWS.

Second Report of the Wellcome Research Laboratories at the Gordon Memorial College, Khartoum. ANDREW BALFOUR, M.D., B.Sc., F.R.C.P.Edin., D.P.H.Camb., Director. Khartoum: Department of Education, Sudan Government. 1906.

SUCH an immense amount of material is collected in this admirable volume that it is impossible to give any just idea of its contents in the space at our disposal. The first report was issued in 1904, and since that time the work has been making steady progress. The director hopes soon to have a

floating laboratory attached to his department. "The Southern Sudan is a country seamed by water-ways, on the banks of which are clusters of native villages wherein all manner of rare and interesting pathological conditions are to be found. Flies and mosquitoes abound; the birds, reptiles, and fish harbour strange parasites; men die from curious diseases; there is a vast field for the study of tropical medicine." After the interesting introduction by the director and editor, the Report goes on to deal with mosquito work in the Sudan, with biting and noxious insects other than mosquitoes, and with trypanosomiasis and various other matters. Mr. Ernest E. Austen, of the British Museum, writes on bloodsucking diptera from the Sudan. Mr. F. V. Theobald writes on culicidæ, and on human, animal, and vegetal pests. We have also a report from Dr. Sheffield Neave, the travelling pathologist and naturalist. Dr. Neave obtained very encouraging results in the treatment of trypanosomiasis in a Uganda boy from the injection of chrysoidine hypodermically—better results than with arsenic and trypanroth. Dr. William Bean's report from the chemical laboratory touches on such interesting subjects as Sudan grains and gum, ancient gilded pottery, gunpowder made by the Khalifa, a magic powder, iron ore from the Bahr-el-Ghazal, arrow poison, the milk supply of Khartoum, and the chemical composition of the Nile waters.

The Report is freely illustrated by plain and coloured figures. Some of these are very beautiful. The volume as a whole is meritorious in the highest degree, and can be recommended to all who are interested in medicine or natural history, as well as to those who, on other grounds, are interested in the Egyptian Sudan.

The Practical Medicine Series. Edited generally by GUSTAVUS P. HEAD, M.D. Series 1906. Chicago: The Year Book Publishers. Authorised Agents for Great Britain: G. Gillies & Co., 28 Gibson Street, Glasgow.

IN a recent number of the *Journal* favourable notice was taken of five volumes of this series of Year Books. Although a little late, it is our further duty to mention the remaining books of the series.

Volume IV: Gynecology, edited by Drs. Dudley and Bachellè, comprises General principles, physiological and therapeutic; Infections; Tumours; Displacements; Menstrual disorders, and many subsidiary issues falling under these heads. Stress

is laid on early diagnosis of carcinoma, with a view to timely operation.

Volume VII: Pediatrics and Orthopedic Surgery, for which Drs. Abt, Ridlon, and Bailey are responsible, presents a full table of interesting contents, and contains references on nearly every page to important points in practice.

Volume VIII: Therapeutics, Preventive Medicine, Climatology, Forensic Medicine, has five contributing editors, and, as may be inferred, is altogether an interesting volume. Nearly every topic, from alcoholism to *x*-rays, is touched upon. "Suggestive Therapeutics" get a brief notice.

Volume IX comprises Physiology, Pathology, and New Words in Medicine. Again there is a trinity of editors, Drs. Evans, Gehrman, and Healy. A wide field is covered by this volume. Of the more than a hundred new words mentioned by Dr. Healy, the whole of them have not come likely to stay.

Volume X discusses Nervous and Mental Disorders, and Affections of the Skin, ordinary and specific. Drs. Baum, Patrick, and Healy, are the editors. In these days of high pressure and defective morality, this volume is well worthy the study of the young practitioner. Syphilis receives attention in sixteen pages. Zittman's mixture, containing mercury, alum, and sarsaparilla, &c., is mentioned with commendation.

Books of this class cannot claim properly to be medical literature, but they serve as mentors of what has been already achieved, and may prove instigators of greater triumphs, in the ever-enlarging field of medical and surgical therapeutics. All the volumes have illustrations and indices, they are handy and well printed, and as said before, the binding is in crimson cloth and attractive in appearance. Single copies, or the whole series of ten, may be had from the local agents, Gillies & Co., 28 Gibson Street, Glasgow.

The Medical Epitome Series. Edited by VICTOR COX PEDERSEN, A.M., M.D., New York. London: Hodder & Stoughton. 1905.

WE have already received seventeen volumes of this series, and are not aware whether these comprise the complete set. In any case, when it is stated that each volume consists of from 200 to 300 pages, it will be realised that the series is a substantial enough addition to any library. That the publishers intended it to be a substantial publication will at

once be seen from the editor's preface accompanying each volume, where it is stated that one of the conditions laid down by the publishers was "that the series as a whole should embrace the entire realm of medicine"—truly an ambitious project; another condition being "that the individual volumes should authoritatively cover their respective subjects in all essentials;" "and that the maximum amount of information, in letterpress and engravings, should be given for a minimum price."

It is too late in the day now to question the advisability of teaching by epitome, whatever one may think of the permanency or value of the scientific result. The system has, for the time at least, got a strong hold upon the whole educational system.

Sufficient to say that of their kind these volumes are well put together, many of them carefully and agreeably written, and that some of them—notably those on some of the special branches of the subject—are more than mere epitomes, and deserve to stand alone.

It is perhaps a little surprising that, printed over the name of a publishing firm in Paternoster Row, this series should have been not only edited by an American, written by Americans, but also printed in America. Evidently the art of epitomising must be a peculiarly American one.

It is quite impossible to review the individual volumes in detail. They cover an enormous field. It is only astonishing how closely they preserve the size and uniformity of style, which has evidently been laid down as essential.

The volumes before us deal with Physics and Inorganic Chemistry, Anatomy, Normal Histology, Physiology, Organic and Physiologic Chemistry, Toxicology, Microscopy and Bacteriology, Practice of Medicine, Medical Diagnosis, Clinical Diagnosis and Urinalysis, Nervous and Mental Diseases, Surgery, Genito-Urinary and Venereal Diseases, Diseases of the Skin, Diseases of the Eye and Ear (written by the same authors) Pediatrics, Obstetrics.

Many of the books are illustrated, and all are well bound.

Gastric Surgery. By HERBERT J. PATERSON, M.A., M.B., B.C. Cantab., F.R.C.S. Eng. London: Baillière, Tindall & Cox. 1906.

PERHAPS no other branch of our profession calls more urgently for periods of reflection and retrospection than does the

department of surgery. We want to know whether what has been done well has been well done. It is not so much what the surgeon is capable of doing; for there is little that he cannot now accomplish with the best prospects of immediate success; but what are the more remote results of his treatment so far as they concern the disease or condition for which his operation has been performed. The physician, whose department in recent years has been so extensively encroached upon by the operative incursions of the surgeon, has every right and reason to ask whether the new methods have any claim to supersede the old. Viewing the subject from this standpoint, Mr. Paterson's monograph, or rather his collected series of Hunterian lectures on the subject of gastric surgery, come as a welcome consideration of, and, in part, answer to, some of these cogent questions.

It is not so many years since everything connected with the stomach was strictly and exclusively considered to fall within the domain of medical treatment; and that it should, at least for the time being, no longer do so, implies the want of successful treatment by ordinary therapeutical and other conservative measures. Has surgery done anything better? This is really the question which, in one important section of the work, Mr. Paterson has set himself the task to answer; and a careful perusal of this book will indicate with what assiduity he has approached his subject, and how thoroughly and reasonably he has dealt with it. Take, for instance, the treatment of gastric ulcer. The most biased critic will hardly fail to appreciate the impartial way in which the relative merits of medical and surgical treatment are discussed. Nor will it be possible to arrive at any other conclusion than that which the author comes to after the most careful scrutiny of all the data, that the performance of gastro-jejunostomy holds out the best chance of effecting a cure. Mr. Paterson is equally judicious in the way in which he deals with other subjects connected with gastric surgery. All his opinions are based on a very careful analysis of facts, extending over periods of several years, and collected from a very wide circle of information. To the operating surgeon nothing can be more valuable than those sections of the book which deal with the relative merits of particular methods, for it is by having a scrupulous regard for failures, as well as for successes, that we learn to know where lay our faults, as much as where rest our hopes for future improvements and greater success.

Mr. Paterson, like all good surgeons, has his own little

preferments in the matter of details connected with the particular methods he selects to adopt. These, however, are of minor consideration as compared with the elaborate collection of facts which he has so excellently and so laboriously brought forward. It is to them that most attention deserves to be directed; and we trust a very wide circle of the profession will be led to read this very valuable contribution to the subject of gastric diseases and their treatment by surgical measures.

Abdominal Operations. By B. G. A. MOYNIHAN, M.S.Lond., F.R.C.S. Fully Illustrated. London: W. B. Saunders & Company. 1905.

THE well-known work of Mr. Moynihan upon the surgery of the stomach, liver, gall-bladder, pancreas, and intestines, as represented in his numerous original writings, and in the publications which Mr. Mayo Robson and he have issued in collaboration, may be said to have been crystallised into a coherent and consistent form in this most valuable volume before us.

The title suggests a wider field than Mr. Moynihan has attempted to cover, for gynæcological operations and those dealing with the kidney and bladder, also those for hernia, are excluded. The developments of present-day surgery are, however, such that the close on 700 pages which comprise the volume now presented seem none too ample for the adequate treatment of the remaining portion of the field suggested by the title.

The work is divided into five sections, the first being devoted to General Considerations:—the bacteriology of the stomach and intestines—preparations for abdominal operations—conduct of operations—complications and sequels of abdominal operations—abdominal incisions—penetrating wounds of the abdomen—surgical treatment of acute peritonitis—tuberculous peritonitis—subphrenic abscess—visceral prolapse and its surgical treatment.

Section II includes chapters on Stomach surgery, concerned with—perforating gastric ulcers—gastric and duodenal hæmorrhage—chronic gastric ulcer, pyloric stenosis, &c.—hour-glass stomach—cancer of the stomach—gastro-enterostomy—gastrostomy—jejunostomy—gunshot wounds of the stomach.

In Section III operations upon the Intestines are fully dealt with, chapters being devoted to—intestinal localisation

—suture—enterotomy and enterostomy—colotomy—short-circuiting or anastomosis—enterectomy—intestinal rupture—intestinal obstruction—mesenteric embolism and thrombosis—fæcal fistula—appendicectomy—typhoid perforation—intestinal exclusion.

Section IV deals with operations upon the Liver, including chapters on—hepatic abscess—resection of the liver—liver injuries—injuries to gall-bladder and bile-passages—hydatid disease—operations on gall-bladder and bile-ducts—operations for obstruction of the common duct—the surgical treatment of cirrhosis.

Section V is devoted to a consideration of diseases of the Pancreas and Spleen, special chapters dealing with—operations on the pancreas—injuries of the pancreas—inflammatory conditions of the pancreas—pancreatic cysts—pancreatic neoplasms—pancreatic calculus—operations on the spleen—splenectomy—splenopexy.

In a careful and elaborate appendix are presented a summary and analysis of all the cases of non-malignant diseases of the stomach on which Mr. Moynihan has operated, and this appendix of itself affords interesting and suggestive reading. The summary refers to 200 operations for simple disease in 198 patients. An ulcer was found at operation in 185 cases—in 134, gastric ulcer alone; in 27, duodenal ulcer alone; both gastric and duodenal in 24. Of the remaining 13 cases, 5 suffered from pyloric obstruction due to chronic cholecystitis; no ulcer could be found in 7 cases; and in 1 case the condition found is not recorded. The mortality shown is 4 out of 27 cases operated on for hæmorrhage, and 2 out of 173 cases operated on for chronic ulcer and its complications.

Such a record gives eloquent testimony to the success of Mr. Moynihan's technique and operative skill, and must be taken as a substantial guarantee not only for the worth of the practice he has followed, but for the value to be ascribed to the teaching he is able to lay before the profession in the treatise he has now published.

It is impracticable to attempt to submit his book to detailed reference or criticism. We can strongly recommend its careful examination, and its personal acquisition by every surgeon who desires a modern and authoritative presentment of the surgery with which it deals. It is written in lucid and illuminating style. Its readableness is perhaps one of its most outstanding recommendations, and the truly admirable plates with which it is so liberally illustrated will go far to render its success assured.

We would offer our most hearty congratulations to the author on the achievement which the publication of his work implies, and our congratulations are all the heartier on account of his courageous and deliberate omission of detailed reference to any mechanical appliance, button or bobbin, for intestinal anastomosis. As he very truly says—"By their aid we do not accomplish anything that cannot be accomplished with equal rapidity and with greater safety by the simple suture. The day of mechanical aids is over. The buttons and the bobbins, the elastic ligatures and the forceps of many forms, have now no more than an historical interest."

Course of Instruction in Operative Surgery in the University of Manchester. By WM. THORBURN, B.S.Lond., F.R.C.S. Manchester: Sherratt & Hughes. 1906.

THIS volume has no more ambitious purpose than to present in a more permanent, printed form the brief type-written "notes" which its author has been in the habit of issuing to his students. In this more convenient form no doubt it will commend itself to the Manchester students, but it seems unlikely that it will have a much wider sphere of usefulness. There is little to be said for it as regards any special originality of treatment. We know of better, and, in our view, equally handy books on the subject.

Not only are few alternative methods of performing many of the most important operations given, but there is a very large field of operative surgery quite undealt with. We cannot think that the "notes" before us cover the whole field which even the junior student at Manchester is expected to be acquainted with.

Without going into detail regarding the material of the book, we should suggest that where a particular operation is named, the classical method should be followed, and where the author's teaching diverges from the classical description, this should be clearly stated. There are several instances where this is not done—*e.g.*, in the description of Lisfranc's amputation through the tarsal-metatarsal joint, and in that of Hey's amputation.

Might we suggest also that the original Carden amputation has by most operators been discarded in favour of Lister's modification; yet Carden's method is described, and Lister's operation has a reference of only a line and a half.

A more accurate terminology should have induced the

author to discard the word "colotomy" in favour of the more correct title of "colostomy."

Again, under the paragraph title of "Resection of a portion of Rib," instructions are given to "open pleura by thrusting in forceps." No indication is given as to why this is to be done, or what connection it has with the title of the paragraph. We demur also to a surgeon instructing his students to "tear away fragment of bone." We have always believed that such a procedure as tearing was, to say the least, unsurgical.

The illustrations are mere line drawings, but are probably the most useful feature of the book.

Notes on Local Anæsthesia in General Surgery. By J. W. STRUTHERS, M.B., F.R.C.S.Ed. Edinburgh: Wm. Green & Sons. 1906.

INTO the compass of 136 pages there has been gathered nearly all that has up to the present been proved to be of real value in the way of practical application of local anæsthesia in both minor and major surgery.

The various methods of infiltration, regional, and spinal anæsthesia are dealt with fully and clearly in separate chapters. They are dealt with not only from the historical point of view, and from the point of view of the best-known advocates and exponents of each, but also with the help of a very virile and decided individual judgment on the part of the author of the book. He has evidently tested the methods he speaks of, and has formed very decided opinions, on grounds which he sets out clearly and forcibly. It is interesting to note that, though giving every credit to the various derivatives from, and substitutes for, cocaine, Mr. Struthers finds cocaine itself (or rather cocaine hydrochlorate) in all respects the most serviceable and reliable. Also he regards the combination with adrenalin as a great advance on the ordinary solution of cocaine alone in water or normal saline. We are not sure that we can grant all the statements which are made in favour of this, or against that, particular method. A pretty extended experience of local anæsthesia in very various conditions has induced in the writer's mind a fairly definite belief in the efficacy of simple watery injections or simple saline injections. Mr. Struthers, it is true, does not altogether ignore the effect of pressure in the production of

regional or infiltration anæsthesia, but he evidently attaches much smaller importance to it than we do.

The subject of spinal anæsthesia is dealt with very briefly, and a very decided expression of opinion is given against anything approaching its routine employment—at least until “it has been definitely shown to be safer than general anæsthesia.” With this opinion most surgeons will find themselves in agreement.

The book is a most readable one, and presents in concise and useful form nearly everything of proved value so far ascertained. The cases cited in detail, in illustration of the application of local anæsthesia to various surgical operative procedures might well, however, have been omitted. May we also in the mildest way suggest that Mr. Struthers hardly does his fellow-countrymen justice when he states in his preface that “local anæsthesia has, till recently, been little used in this country, and that most work on the subject has been done by German, French, and American surgeons”? So far as practice of local anæsthesia goes, we think it has had a far larger trial, and been put to much more consistent practice in this country, than Mr. Struthers is evidently aware of.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

MEDICINE.

Leukæmic Blood Picture in a Case of Fracture of the Ankle. By Charles E. Simon, M.D. (*Amer. Journ. of Med. Sciences*, March, 1907).—The patient was a coloured man, aged 45, admitted to hospital on 18th October, 1905, with a compound fracture of the right ankle. Nothing suggestive of myeloid leukæmia could be found in the history of his previous health. Differential counts made on 31st October, 2nd, 4th, and 6th November showed an increase of the polynuclear neutrophiles, and low eosinophile values, but no myelocytes or other unusual condition. Cellulitis developed, and on 15th November the leg was amputated through the lower third. The day before the amputation the leucocytes numbered 50,000 per c.mm., and a differential count showed small lymphocytes, 3 per cent; large mononuclears, 2·5 per cent; polynuclear neutrophiles, 56·2 per cent; eosinophiles, 6·2 per cent; mast cells, 17·5 per cent; neutrophilic myelocytes, 15 per cent; eosinophilic myelocytes, 1·2 per cent. While counting 400 leucocytes, 22 normoblasts and several megaloblasts were seen. The spleen was now easily palpable. By 21st November the leukæmic blood picture was much diminished. The leucocytes had diminished considerably in number, and myelocytes were less numerous. Mast cells had fallen to 4 per cent, and only